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WAR MACHINE

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WAR MACHINE

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Post-War Infantry Weapons

The 1950s were a significant era in the design of infantry weapons as gun designers absorbed, or in some cases ignored, the lessons of World War II. Some weapons introduced during this period anticipated those in service today, while others turned out to be unsatisfactory compromises between old and new.

The small arms of the 1950s were an interesting interim between the weapons of World War II and the sleek, efficient designs of today. In part they were produced as a result of the combat lessons learned the hard way during World War II, whilst at the same time the conservative streak inherent in nearly all military structures ensured that in many ways little was changed. Some weapons even ignored the tactical and manufacturing innovations of World War II and thus went back to the days before 1939, while other weapons demonstrated the way ahead to the extent that they (or their influence) are with us still.

Thus this study is a collection of dinosaurs as well as of the modern. Dinosaurs such as the odd Soviet Stechkin (APS) machine pistol can be found, while the AR-10 and Stoner 63 System were on hand to indicate what was to follow. Weapons such as the SIG sub-machine guns ignored the cheap and rapid production methods used during World War II and suffered sales losses accordingly, though their Danish Madsen equivalents, with simplicity and cheapness built in, surprisingly did little better. Gun makers did their best to ignore these 'stamped steel' weapon designs but in the end they were overcome by the requirements of low-cost mass production.

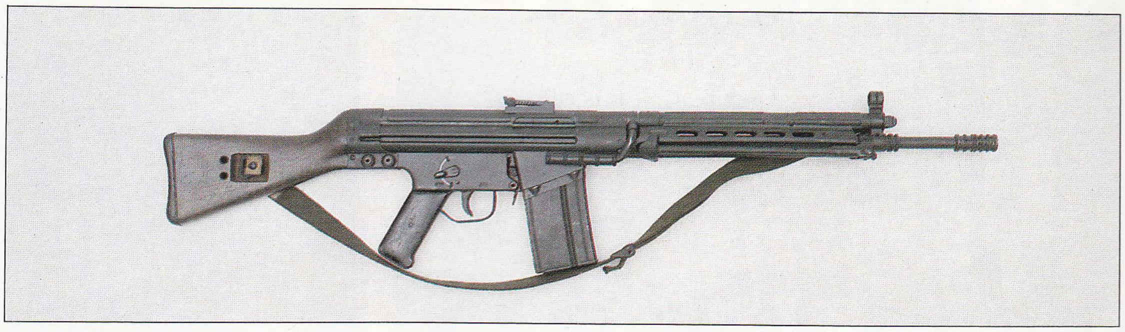
Although little-mentioned in the main text, the main small arms design trend of the 1950s was the conflict between the conservatives and the requirements of modern combat. During the 1950s the conservatives won, but only for a while. This was particularly true in the case of NATO ammunition standardization which made such an impact that, even now, it will be felt for years to come, yet as will be outlined, that decision resulted in a wrong choice at a time when the Soviets were making a very good one with their 7.62-mm×39 cartridge. The results of those decisions and designs are with us still, so this study has more than passing interest to all who study small arms.

The guard at Lenin's mausoleum retain SKS rifles to this day; modern rifles might be superior weapons, but have not been popular with drill instructors from Moscow to London. The SKS was designed during World War II to fire an intermediate power cartridge.

During the Vietnam War the Long Range Reconnaissance Patrols or LRRPs (pronounced 'Lurps') used an incredible mixture of kit, weaponry often being a matter of personal choice. Here LRRPs examine a Soviet AK-47 and a Carl Gustav SMG.

SPAIN

CETME Modelo 58 assault rifle



The **CETME Modelo 58** has a long history stretching back to the German Sturmgewehr 45 (StG 45) of World War II. This was an attempt by Mauser designers to produce a low-cost assault rifle that incorporated a novel system using a system of rollers and cams to lock the bolt at the instant of firing. After the Allied victory the nucleus of the StG 45 design team moved to Spain, via France, and established a new design team under the aegis of the Centro de Estudios Tecnicos de Materiales Especiales (CETME), just outside Madrid.

With CETME the roller locking system was gradually perfected at a leisurely pace. The resultant assault rifle looked nothing like the StG 45 starting point but the original low-cost manufacturing target was met. The assault rifle produced by CETME was made from low-grade steels and much of it was stamped and shaped using sheet steel. An automatic-fire capability was featured, and in overall terms the weapon was simple and basic.

It was 1956 before the first sales were made, to West Germany. This involved a batch of only 400 rifles, but the Germans decided that some modfications to the rifles were required to meet their requirements and by a series of licence agreements (between a CETME licence production offshoot in the Netherlands and Heckler & Koch) the CETME rifle ended as the Heckler & Koch G3, though the Spanish appear to have gained little from the deal.

In 1958 the Spanish army decided to adopt the CETME rifle in a form known as the **Modelo B**, and this became the Modelo 58. The Modelo 58 fired a special cartridge outwardly identical to the standard NATO 7.62-mm (0.30-in) cartridge but using a lighter bullet and propellant charge. This made the rifle much easier to fire (as a result of reduced recoil) but also made the cartridge non-standard as far as other NATO cartridge users were concerned. In 1964 the Spanish adopted the NATO cartridge in place of their own less powerful product and rifles adapted or produced to fire the NATO round became the **Modelo C**.

The Modelo 58 has since been produced in a number of versions, some with bipods, some with semi-automatic mechanisms and others with folding butts, and there has even been a sniper version fitted with a telescopic sight. The latest version is the **Modelo L** chambered in 5.56 mm (0.219 in), but the basic Model 58 is still available from CETME.

Above: The core of the Mauser team which designed the German Sturmgewehr 45 decamped to Spain after the war and developed a new assault rifle based on its layout. It is made of low-grade steel and is built with the emphasis on cheapness and reliability rather than looks.

The Spanish army adopted the CETME as its standard rifle in 1958, initially buying the Modelo B, chambered for a unique, light, 7.62 mm round. In 1964 Spain decided to adopt the more powerful 7.62-mm NATO cartridge, and CETME modified their design accordingly to make the Modelo 58 C.

Specification

Modelo C

Calibre: 7.62 mm (0.30 in)
Weight: 4.49 kg (9.9 lb)
Lengths: overall 1.016 m (40 in); barrel 450 mm (17.7 in)
Muzzle velocity: 780 m (2,559 ft) per second
Rate of fire: (cyclic) 600 rpm
Feed: 20-round box

SWITZERLAND

SIG sub-machine guns

The sub-machine guns produced by the Schweizerische Industrie-Gesellschaft (SIG) in the period after 1945 were scarcely among the most successful of that company's products. The first of these designs was the **SIG MP48**, a weapon that was the first truly all-Swiss sub-machine gun to reach production, and although it was made in the usual SIG way (i.e. with great attention to detail, superb finish and high-quality materials throughout), the MP48 was a commercial flop.

SIG had noted the World War II production trends towards cutting corners in manufacturing weapons of all types, but instead of making use of stampings and welds for mass assembly the Swiss decided to make use of precision castings which would require a minimum of machining. Further savings were made in omitting any form of safety mechanism. Instead the magazine was made to fold forward when the weapon was not in use – this saved space while at the same time removing the ammunition feed from the gun. Otherwise there was little remarkable about the MP48 and the world was not impressed. The MP48 did not sell in a market already sated with vast stockpiles of cheap World War II weapons. One small batch was sold to Chile.

The SIG designers returned to their drawing board and came up with the **MP310** in 1958. In many ways this was similar in overall concept to the MP48 and featured the same folding magazine system. However, the MP310 was made to be sold at a much lower price than the MP48. More use was made of cheaper plastics and other low-cost materials, and a two-stage trigger mechanism was introduced: a slight squeeze of the trigger produced single shots, while more pressure produced fully-automatic fire. The MP310 used the same telescoping butt arrangement as the MP48.

The MP310 was slightly more successful than the MP48, but even so only about 1,000 were produced. Small batches were sold, mainly in South America and the Far East, but all the time the MP310 suffered from the same factor that had affected the MP48: the potential markets were still working their way through the stockpiles of World War II surplus weapons.

Specification

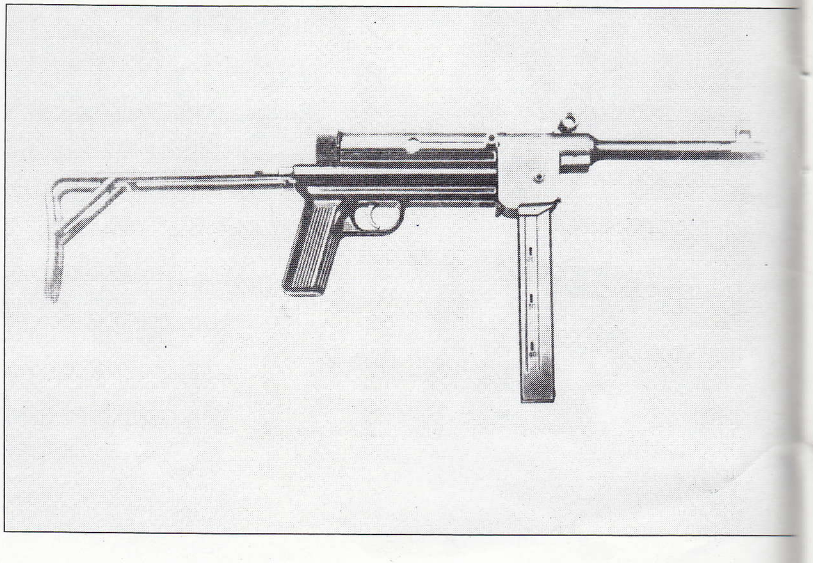
MP48

Calibre: 9 mm (0.354 in)
Weight: empty 2.92 kg (6.44 lb)
Length: stock extended 711 mm (28 in); stock folded 570 mm (22.5 in); barrel 196 mm (7.75 in)
Muzzle velocity: 381 m (1,250 ft) per second
Rate of fire: 700 rpm
Feed: 40-round box

Specification

MP310

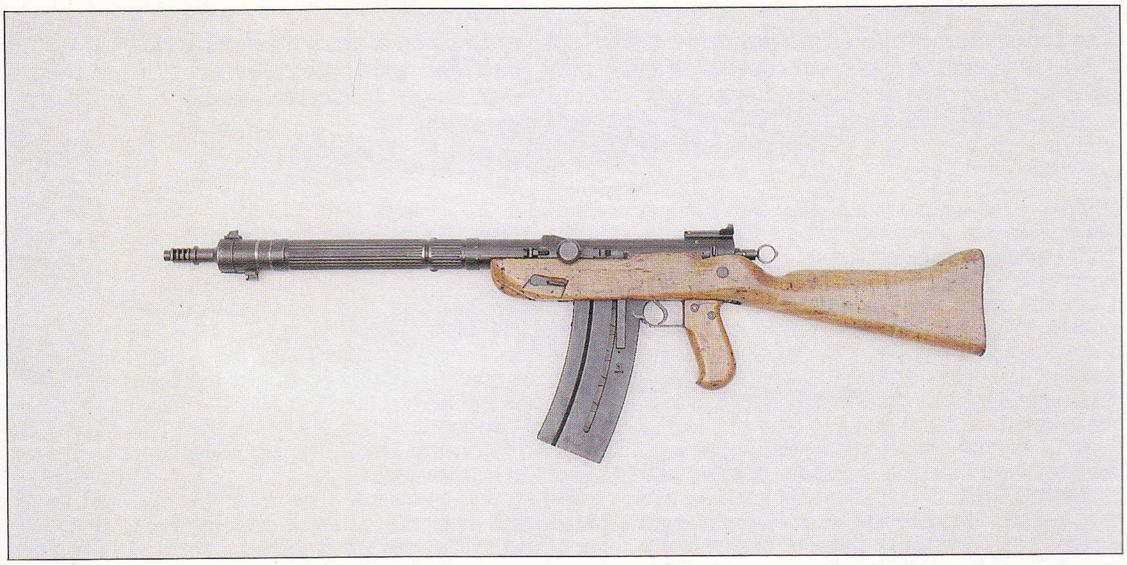
Calibre: 9 mm (0.354 in)
Weight: 3.15 kg (6.94 lb)
Length: stock extended 735 mm (28.95 in); stock folded 610 mm (24 in); barrel 200 mm (7.83 in)
Muzzle velocity: 365 m (1,198 ft) per second
Rate of fire: 900 rpm
Feed: 40-round box



The MP310 was another new design which suffered from the effects of the post-war surplus of small arms, despite the use of plastics and precision castings, instead of expensive machined components, to keep the costs down.

SWITZERLAND

SIG assault rifles



SIG produced one of the most unusual post-war rifles, the AK 53, which used a stationary bolt and a moving barrel, reducing the overall length of the gun. The disadvantages of this operation include potential cook-off and a tendency to jam.

The Swiss were rather slow to work their way round to designing an assault rifle, but when they did produce one it turned out to be one of the best of its time. It had its origins in a weapon known as the **Sturmgewehr Modell 57** or (**StuG57**) that took advantage of the delayed-blowback roller breech-locking system pioneered by the Spanish CETME rifles. This rifle was produced by SIG for the Swiss army calibred for the national 7.5-mm (0.295-in) rifle cartridge, and even carried over the fluted chamber of the CETME rifle.

At first sight the StuG57 looked odd and awkward. In use it was quite the opposite. As always the high standard of SIG manufacture made it a good weapon to handle and the Swiss soldiers liked the integral bipod and grenade-launcher. However, the use of the Swiss cartridge limited sales so SIG went one stage further and developed the **SIG SG510** series of rifles, designed to fire more internationally accepted rounds. In many ways the SG510 was identical to the StuG57 and carried over the extremely high standards of workmanship which, in their turn, meant that although the weapon was a soldier's dream it was very expensive. Consequently international sales were few. The Swiss army purchased the larger batches but some went to some African and South American nations.

This was not for want of trying on the part of the SIG designers. They produced several versions; the first was the **SG510-1** chambered for the 7.62-mm (0.30-in) NATO cartridge. The **SG510-2** was a lighter version of the SG510-1. The **SG510-3** was produced to fire the Soviet 7.62-mm short cartridge used on the AK-47. The **SG510-4** was another 7.62-mm NATO round model, and there was also a single-shot only sporting version known as the **SG-AMT** which was sold in large numbers to Swiss target-shooters.

The SG510-3 and SG510-4 had some extra features. One was an indicator on the magazine to show how many rounds were left and another was a folding winter trigger. The bipod (folding up over the barrel) was retained and both had provision for fitting optical sights for night vision or sniping.

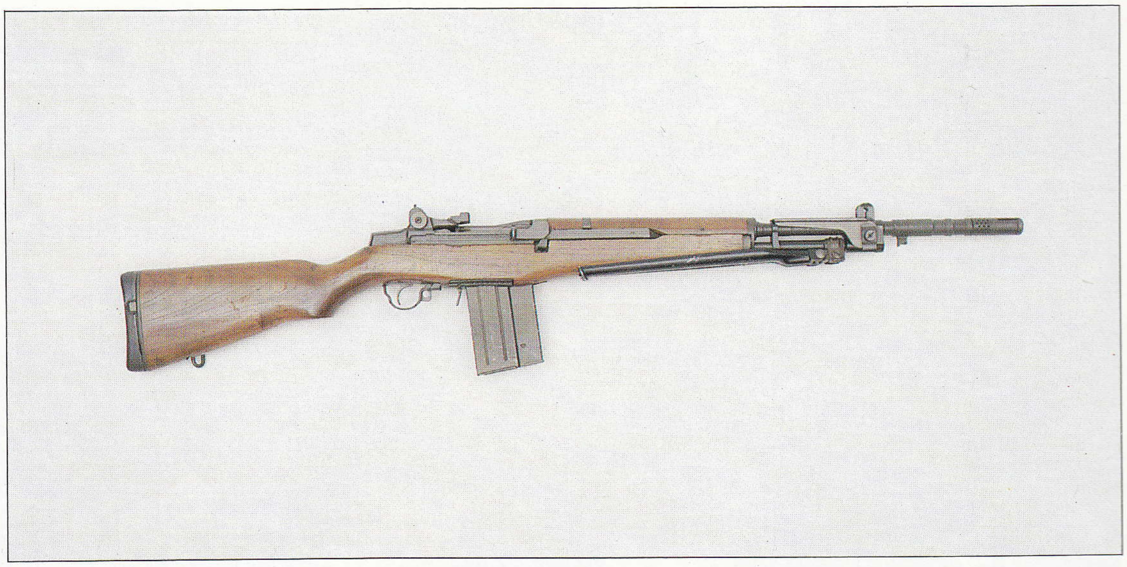
The StuG57 and SG510 can still be found hanging on the walls of many Swiss army reservists, and numbers of the SG510 are still in use in Bolivia and Chile.

Specification

SG510-4
Calibre: 7.62 mm (0.30 in)
Weight: 4.45 kg (9.81 lb)
Lengths: overall 1.016 m (40 in); barrel 505 mm (19.8 in)
Muzzle velocity: 790 m (2,592 ft) per second
Rate of fire: cyclic 600 rpm
Feed: 20-round box

ITALY

Beretta BM59 rifle



The BM59 is based on the US M1 Garand self-loading rifle, which Beretta was producing under licence when NATO adopted the 7.62-mm×51 cartridge. Beretta modified the M1 design to accept the new round.

In 1945 Beretta started the licence production of the American M1 Garand rifle for the Italian armed forces, and by 1961 about 100,000 had been made, some for export to Denmark and Indonesia. The introduction of the NATO 7.62-mm (0.30-in) cartridge meant that these rifles would have to be replaced as they fired the American World War II 0.30-in round, for a simple rechambering of the Italian Garands would have meant that the Italian armed forces were saddled with an outdated rifle design for years to come.

The Beretta designers had for some time before 1961 been contemplating a revision of the basic Garand design to produce a selective-fire automatic weapon using the existing mechanism to as great an extent as possible. The result was the **Beretta BM59**, which was the Garand at heart but modified to provide the required automatic-fire feature. It fired the NATO standard 7.62-mm cartridge. A 20-round detachable box magazine replaced the old eight-round magazine and some other slight alterations were introduced, but basically the BM59 was (and still is) a 'breathed-on' Garand.

Almost as soon as the BM59 was placed in production for the Italian armed forces a number of variants began to appear. The base model was the **BM59 Mark 1**, issued to most of the Italian army. Then came the **BM59 Mark 2** with a pistol grip and a light bipod. The next two variants were virtually identical: the **BM59 Mark 3 Paracudisti** for use by airborne units had a removable grenade-launcher at the muzzle, while the **BM59 Mark 3 Alpini** model for mountain troops had a fixed grenade-launcher. These two versions both had folding skeleton butts and light bipods. On the **BM59 Mark 4** the bipod was a much more robust piece of equipment for this version was intended for use as a squad fire-support weapon. The Mark 4 also had a heavier barrel and a butt strap to allow it to be used for its fire-support role.

The BM59 proved to be an excellent modification of an existing design and it is still in use by the Italian armed forces. It was built at one time under licence in Morocco and Indonesia, and Nigeria planned to produce the BM59 as well, though the Biafran War put paid to that project. The one drawback to the BM59 compared with many contemporary designs was (and still is) its weight, and the need for extensive machining during manufacture. For all that the BM59 is a very robust and reliable weapon that still has some service life left to run.

Specification

BM59 Mark 1 Ital
Calibre: 7.62 mm (0.30 in)
Weight: unloaded 4.6 kg (10.14 lb)
Lengths: overall 1.095 m (43.1 in); barrel 490 mm (19.29 in)
Muzzle velocity: 823 m (2,700 ft) per second
Rate of fire: (cyclic) 750 rpm
Feed: 20-round box

Hunting the Mau Mau

The British Army found itself fighting a wearisome succession of bush wars during the 1950s, and the four-year campaign against the Mau Mau terrorists in Kenya presented its own problems. It was a low-intensity war, fought by isolated small units patrolling vast areas of bush in search of an elusive enemy.

There is a theory that much of the UK's success in counter-insurgency warfare lies in the simple fact that her armed forces are not as well equipped as, for example, those of the USA. Certainly the lack of the type of massive firepower enjoyed by the Americans has meant that the British have had to develop a more flexible approach to counter-insurgency warfare (to every kind of warfare, actually, though that is really another story).

What is sure is that successful counter-insurgency warfare relies on well trained and motivated soldiers imaginatively led, and that the military should co-operate totally with police and politicians, under a unified command. One of the classic examples of a successful counter-insurgency operation was the campaign against the Mau Mau terrorists in Kenya that took place between 1952 and 1956. But before looking at how this campaign was won by the soldier on the ground, it should first be emphasized that insurgents do not, in the first stages of their campaign, try to take on the military direct: their aims are not in fact military but political, and to achieve these aims it is easier to focus their attentions on civilians, indeed on their own people. When soldiers are attacked it is as much for propaganda purposes as for anything else.

There were two ostensible reasons for the Mau Mau terror compaign. First was land hunger, caused in part by the fact that the Kikuyu tribe had grown from 50,000 to more than a million during Kenya's half century of British colonial rule. Since the Kikuyu were traditionally farmers, this resulted in demands for more land than they had already been allocated. The British were accused of having stolen the Kikuyus' rightful land from them. However, many Kikuyu had in fact left their farmlands and drifted into the main towns and Nairobi, expecting to find well paid jobs. The fact that there were few, if any, jobs did little to soothe their grievances.

The second ostensible reason for the Mau Mau revolt was the colonial government's opposition to the practice of female circumcision. The practice had been frowned upon for many years; but by and large the government hoped that continuing education would ultimately see the practice's end. So for the most part it was tolerated, if not ignored. However, in 1951 a missionary from the Church of Scotland denounced the custom in no uncertain terms. Kikuyu leaders claimed that this was yet another example of unwarranted interference in their own affairs: the Mau Mau terror campaign began in earnest.

It is a fact that the Mau Mau attacked mostly other Kikuyu who were either loyal to the government or who were uncommitted in either direction. Their stated aim was for an independent Kenya led, naturally, by the Kikuyu who were the dominant tribe. The Mau Mau's re-

The pursuit of the Mau Mau terrorist gangs involved patrolling through dense bush. This 1953 photograph shows several men of the Buffs, who developed a system of six-man patrols, which was adopted by most of the security forces.

The old and the new: one soldier carries the FN FAL, and his comrade is armed with the old No. 5. Although the FN has proved a popular weapon in British service, the 7.62-mm × 51 cartridge was just a compromise between full- and intermediate-power rounds.

volting system of blood oaths was designed to ensure that all who took them committed him or herself totally to the cause of 'liberty', and also completely isolated themselves even from their own tribe .

The Mau Mau operated in small gangs. At night they would terrorize, murder and maim other Kikuyu and the very, very occasional white settler. By day, they holed up in the densest bush. Initially, Mau Mau were to be found more or less throughout west central Kenya, except of course in other tribes' land; the Masai, for example, took a certain pride in hunting and killing them. But as time went on, as more stringent security measures took effect, the Mau Mau were broken in the major towns and really only existed as a major irritant in the Aberdares, a mountain range 100 km (60 miles) long that includes Mount Kenya.

There were two types of military formations that proved most effective against the Mau Mau: the first was regular army six-man patrols, and the second 'pseudo' gangs. These were composed of ex-Mau Mau terrorists and loyal Kikuyu drawn from the police, and were led by white settlers with dyed skin. Their aim was to infiltrate the Mau Mau camps by posing as fellow terrorists.

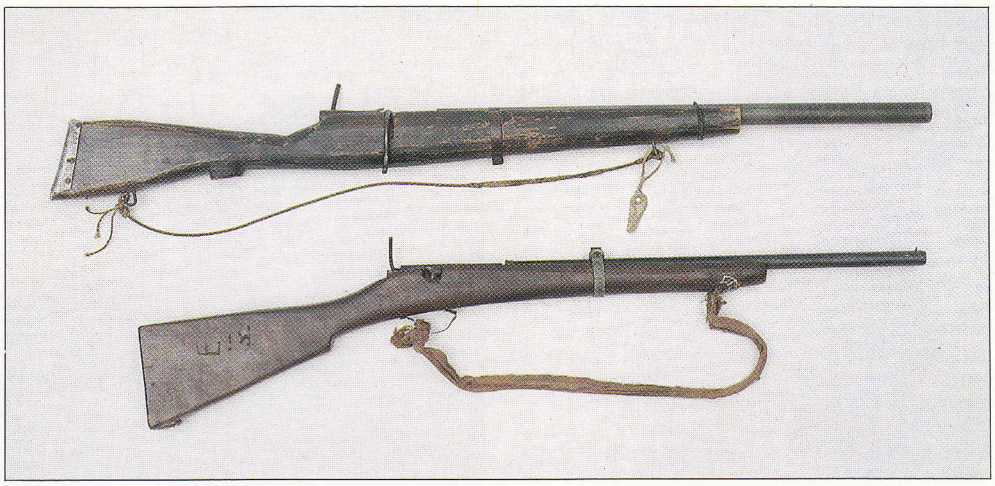
Jungle Warfare School

The six-man patrol system was developed by the 1st Battalion The Buffs. Let us assume that you have been posted to Kenya to join B Company, 1st Buffs; the year is 1955 and your first acquaintance with the task at hand takes place in the Jungle Warfare School at Nyeri, to the north of Nairobi. (The British believe that terrain acquaintance schools should be situated in the relevant country if at all possible; by contrast, the US Army did not establish a jungle warfare school in Vietnam until the final year of conflict, by which time it was too late.) Here you have been issued with jungle greens, floppy hat and jungle boots. You may not be too sure about the boots because you have heard alarming stories of how they make your feet rot, but at least you do not have to polish them. You are also trained on a variety of weapons, since the school has no way of knowing which one will become your own personal weapon in the field: silenced Stens, the new Patchett (soon to be known simply as the SMG, Sterling), Bren guns and Lee-Enfield rifle. At first you are a little surprised, for with the exception of the silenced Sten, you have trained on all of these back in the depot.

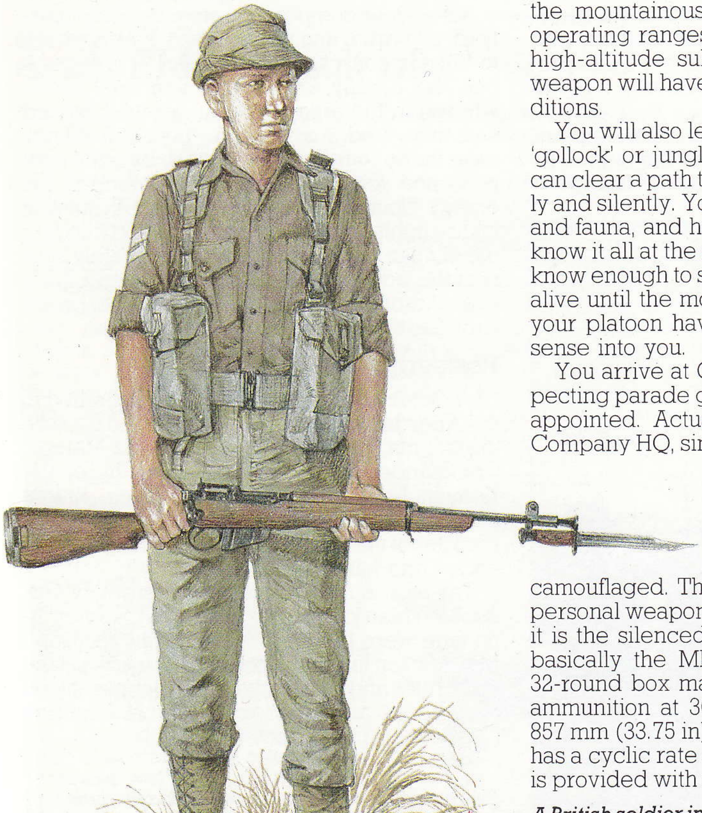
But as you are to find out, there is a world of difference between managing a weapon properly in England and in Kenya, particularly as the mountainous area in which you will be operating ranges from the hot lush tropical to high-altitude sub-arctic. Both you and your weapon will have to be effective within all conditions.

You will also learn fieldcraft: how to use your 'gollock' or jungle knife correctly, so that you can clear a path through the densest bush easily and silently. You learn about dangerous flora and fauna, and how to avoid them. You cannot know it all at the end of the course, but you will know enough to stand a good chance of staying alive until the more experienced members of your platoon have managed to knock further sense into you.

You arrive at Company HQ. If you were expecting parade ground efficiency, you are disappointed. Actually, it is a little hard to see Company HQ, since it has been extremely well camouflaged. There, you are issued with your personal weapon. To your delight, you see that it is the silenced Sten. The Sten Gun Mk 6 is basically the Mk 5 plus a silencer: it has a 32-round box magazine, fires 9-mm (0.354-in) ammunition at 305 m (1,000 ft) per second, is 857 mm (33.75 in) long, weighs 4.32 kg (9.5 lb), has a cyclic rate of 450 rounds per minute, and is provided with fixed sights, a pistol grip, plus wooden butt and brass butt plate. Gas holes have been drilled in the barrel of the silenced version to reduce velocity and thus avoid the sonic boom. Since the silencer gets very hot, a canvas guard is wrapped around it. Bursts are not fired from it except in extreme emergencies.



Desperately short of weapons, the Mau Mau manufactured their own. These crude weapons could prove as dangerous to the firer as to the target.



A British soldier in Kenya during the Mau Mau campaign is shown armed with the No. 5 rifle, a Lee-Enfield No. 4 with a shortened barrel, which proved unsatisfactory. In 1951 it was announced that the British Army would adopt the EM-2 automatic rifle, but US opposition stopped it.

So what exactly is the silenced Sten for? The answer is that essentially it is a weapon of surprise, to be used when you particularly do not want the enemy to know that an attack is about to take place, or as a means of demoralizing the enemy, or of being able to kill an enemy leader, say, without giving your own position away. A single shot fired by a silenced Sten has an extremely good chance of going unheard in jungle. It is thus an excellent weapon for taking out sentries (the Mau Mau did not guard their camps at night) or the rear man of an enemy gang. The Sten Gun Mk 6 is not in this respect an automatic weapon at all; better to think of it as a very high-powered, accurate and reliable (and very large) automatic pistol, plus silencer.

You are assigned to your patrol: five men plus yourself under the command of an experienced sergeant. You discover that you will stay with that same patrol for your entire tour of duty, unless you are killed or wounded. B Company's commander believes that a patrol's effectiveness increases in direct proportion as to how well its members know and trust each other.

The Aberdares have been surrounded by a 1.6-km (1-mile) 'access belt', in which limited civilian movement is allowed. The mountain range itself is prohibited territory. Your patrol's main job is to patrol the access area and the lower slopes. You find that you quite enjoy these lower slopes. Podo (quiver tree), wild fig and cedar trees grow up to 20 m (65 ft) tall, forming a dense canopy of branches and creepers that all but blot out the sun completely. You walk on a soft carpet of humus; there is some undergrowth, but nowhere near as dense as the Malayan jungles you have heard about. Nor is it as stickily, clammily hot as the Malayan jungles.

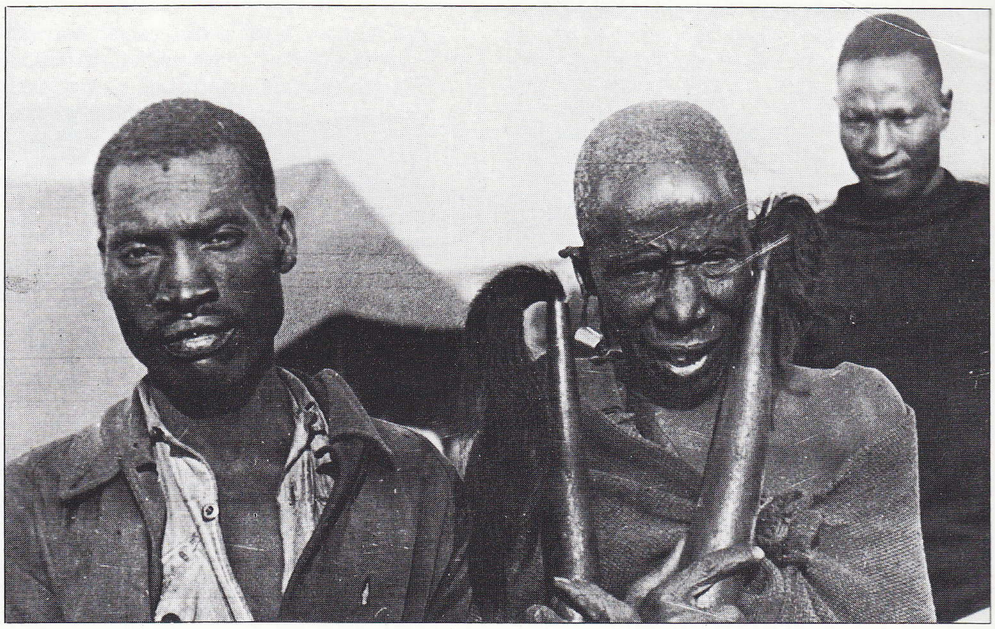
Your patrol receives regular briefings from field intelligence teams, run jointly by the army and Special Branch. Your basic role is to try to intercept food carriers, local Kikuyu who take food to the Mau Mau camps far higher up the mountainside. You learn how to walk silently, and how to be concerned only with your own area of sight and not to continually look all around you. You are number two in the patrol, walking some 30 m (33 yards) behind the number one. You all travel extremely lightly, with ammunition and water your major burdens. But you do sweat; you have learnt to smear vaseline under your arms and between your legs to stop chafing. You have also learnt not to sit on the ground unless you are positive that there are no leeches around. Over the past few weeks, you have become more concerned about the local wildlife than the Mau Mau themselves!

(During one patrol mounted by the Inniskillings, a soldier found himself facing a herd of charging elephants. Figuring that he was probably going to be trampled anyway, he let out an Irish war cry and charged right back at them, indeed right back and through them, and then through a very surprised gang of Mau Mau who had started the elephants charging in the first place. The Inniskilling did not stop; he subsequently spent three days alone in the jungle before managing to find his way back to his patrol.)

Your patrol manages to capture only three food carriers, young teenagers who seem almost relieved to be caught. It is obvious that the Mau Mau are close to being defeated. So your patrol is twinned with another, and taking rations to last three full days, you set off for the upper slopes of the Aberdares. Intelligence thinks that it has pinpointed the existence of a Mau Mau camp. The 12-man patrol is to locate and destroy it. If necessary, you can be resupplied by the Kenya Air Reserve flying US-built Piper Pacer aircraft.

These are superb machines that have proved invaluable in the higher altitudes where helicopters find it difficult to operate. Lately, they have been converted to carrying grenades, machine-guns and even light bombs, so they will be able to do considerably more than merely resupply your 12-man patrol.

You set off. To begin with the route is comparatively straightforward, leading as it does through the primary forest. As you begin to climb, however, the forest gives way to bamboo, tall, thin and densely packed. It is impossible to force your way through. Cutting and slashing at it becomes a nightmare. The only thing is to follow animal tracks, trying all the time to stay roughly on course.



The enemy: a Mau Mau witch doctor with implements described in a British press release as 'childish apparatus'. In fact the Mau Mau conducted a campaign of Conradesque barbarity against loyal members of the Kikuyu tribe.

At about 3350 m (11,000 ft) above sea level, the bamboo gives way to moorland, but moorland with a difference. Giant heathers and lobelias, some over 4.5 m (15 ft) high, can provide easy hiding places for the enemy. It promises to be cold at night, too.

The Piper Pacer flies in with fresh supplies, and your patrol settles down for the night. The patrol commander has chosen a triangular perimeter and posted his Bren guns accordingly. You have to know exactly where that perimeter is, because if you manage to stray outside it (say in searching for the latrines at night) you are liable to be shot: anything outside the perimeter is fair game.

The next day the patrol continues in earnest. You spend the next week combing the upper slopes, without any result. The forecast Mau Mau camp is found, but has obviously been abandoned several weeks ago. Eventually, you all return to base. Still, going back down is considerably easier than going up!

But as your company commander continually tries to drum into you, a patrol does not have to kill someone to be successful. It is enough that the enemy knows that you are (somewhere!) in the area, that you are well trained and motivated, and that the peaceful Kikuyu have come to trust you. In short, by your very presence you are denying the ground to the enemy. Counter-insurgency warfare is not won by fire fights. It is won in the hearts and minds of the civilian population who will ultimately support the side that offers them the greater measure of protection, and which appears to be the stronger and better organized.

Postscript

On 7 October 1956, 'pseudo gangs' operating in the Aberdares managed to wound and capture the last major Mau Mau leader. 'Field Marshal Commander-in-Chief Dedan Kimathi, of the Kenyan Land and Freedom Armies, Knight Commander of the African Empire and Prime Minister of the Southern Hemisphere' was sentenced and hanged for murder.

The total Buffs tally for the emergency was 290 Mau Mau killed, plus 194 taken prisoner. At no time were there more than a few thousand Mau Mau on full-time active service against the authorities and against their own people. It took four years and approximately £30 million (1950s value) to destroy them.

Samburu spearmen and bowmen assisted the British forces in the hunt for Mau Mau terrorists, their tracking skills being of great importance in hunting down the enemy. The sheer brutality of the Mau Mau counted against them as the campaign went on.

BELGIUM

Fusil Automatique modèle 49

The Belgian **Fusil Automatique modèle 49** was known by several other names: to some it was the **Saive**, to others the **SAFN (Saive Automatique, FN)** and to more as the **ABL (Arme Belgique Legère)**. The weapon was actually designed before World War II but the arrival of the war shelved the project, ready for it to be revived once peace arrived again. The weapon was designed by one D. J. Saive who moved to the UK when the Germans arrived in Belgium in 1940 and spent the war working on small arms designs for the British. In 1945 he offered his pre-war design to the British army, which tested it and turned down the offer. Once back in Belgium the rifle was actually produced by FN (Fabrique Nationale d'Armes de Guerre) at Herstal, near Liège. The company made a lot of money out of it.

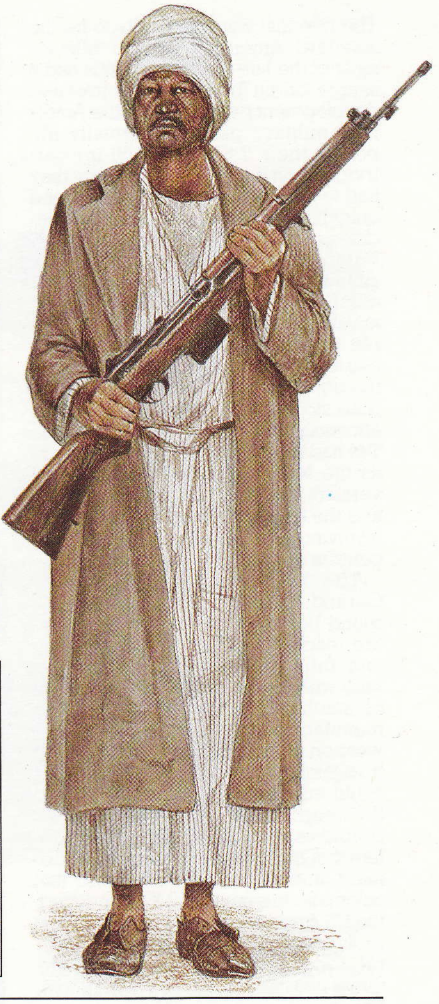
By whatever name it was called, the modèle 49 was in basic design a gas-operated self-loading rifle. The bolt locking was achieved by using cams in the sides of the receiver causing the bolt to tilt at the correct instant. This action was thus strong and could absorb a great deal of hard use, but it meant that the entire rifle mechanism had to be very carefully machined out of high-quality materials. This made the weapon rather expensive to produce, but when the modèle 49 was placed on the open market in 1949 it sold surprisingly well. This was partly due to the fact that the modèle 49 was offered in a variety of calibres, ranging from 7 mm (0.275 in) and 7.65 mm (0.301 in), both established Continental calibres, to the then widely used 7.92 mm (0.312 in) and the American 0.30 in (7.62 mm). All these calibres were for the well established full-power rifle cartridges.

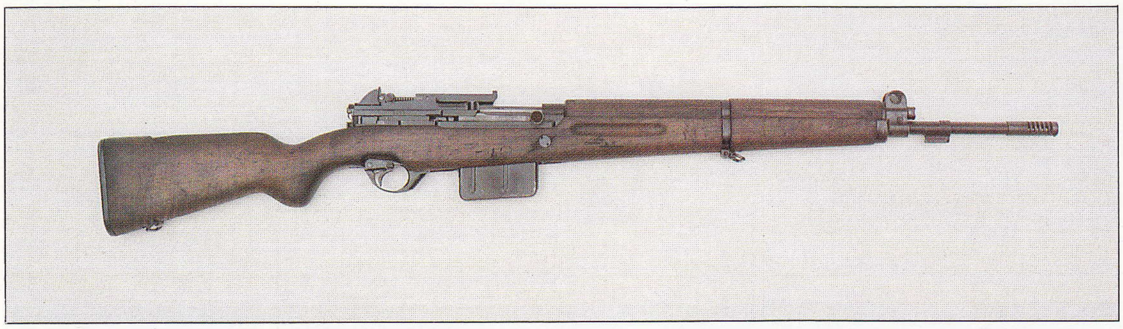
The modèle 49 was sold not only in Europe but to Venezuela, Colombia and Indonesia. One of the largest sales batches went to Egypt, where the modèle 49 remained in use for some time (and may still be encountered). But perhaps the most important impact made by the ABL was that it was used as the design starting point for the FN FAL, the Fusil Automatique Legère, destined to be one of the most important rifles within NATO and elsewhere for the following decades.

Specification
modèle 49
Calibres: 7 mm (0.275 in), 7.65 mm (0.301 in), 7.92 mm (0.312 in) and 0.30 in (7.62 mm)
Weight: 4.31 kg (9.5 lb)
Lengths: overall 1.116 m (43.94 in); barrel 590 mm (23.23 in)
Muzzle velocity: dependent on calibre
Feed: 10-round box

Right: Weapons produced to a high standard often lose sales to cheaper weapons, but FN managed to sell their mle 49 to several different armies, offering it in many calibres. This Egyptian soldier carries the 7.92 mm model.

Below: The FN mle 49 is the ancestor of the FN FAL, designed before the war by Dieudonné Saive, who escaped to Britain when the Germans overran Belgium. While in England he continued to develop his designs, and after the war the mle 49 was sold to Egypt and Latin America.





UK

EM-2 assault rifle

The **EM-2** story is one of political considerations taking precedence over military requirements, for although the EM-2 was an excellent weapon it was never accepted for service.

The British army learned some hard lessons during World War II, one being that its time-honoured 0.303-in (7.7-mm) cartridge was well outdated. It was too powerful and used cordite, which had been overtaken by more efficient propellants. Thus after 1945 the army initiated a series of trials to find something better and came up with a short-cased cartridge known as the 0.280-in (actually 7-mm/0.276-in) type. A rifle was devised to fire the new round though the first attempt, known as the **EM-1**, was not fully developed as it was deemed too complicated.

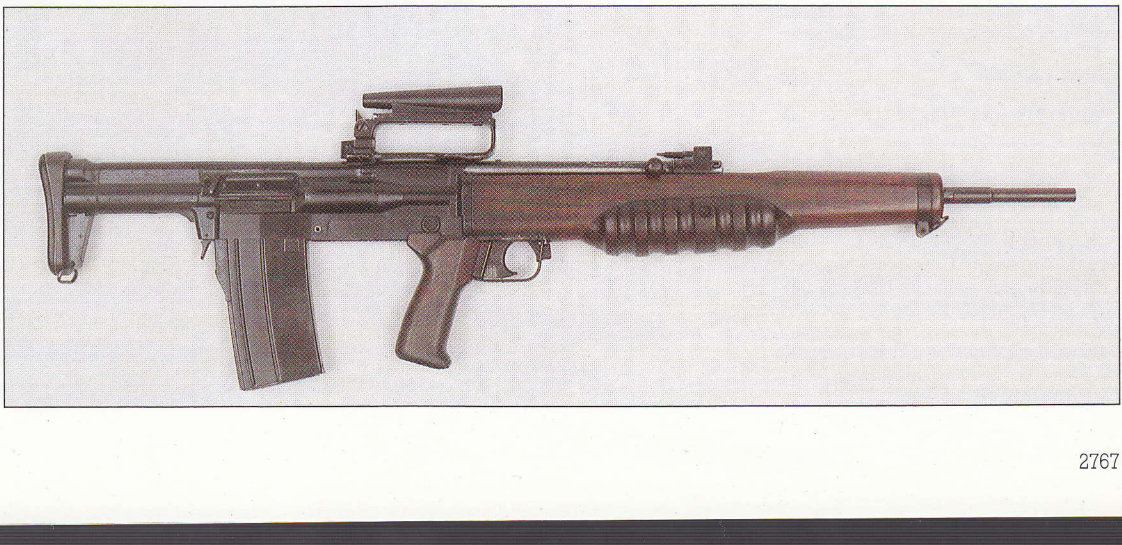
Then a new design team came up with the EM-2. For its day the EM-2 (Enfield Model 2) was a novelty, for it used a 'bullpup' layout with the magazine behind the trigger group. This made the weapon short and handy without making the barrel shorter, the receiver being in the butt. Gas operation was used and the weapon fired from a closed breech. A selective-fire mechanism was introduced and there was something then completely new, a permanently-fixed optical sight.

The EM-2 proved to be extremely reliable during trials, and in 1951 it was announced that the EM-2 would be adopted by the army as the **Rifle, Automatic, 7 mm No. 9 Mk 1**. All seemed well until politics intruded. The Americans announced that they did not consider the British round powerful enough, and since the newly-formed NATO alliance was supposed to introduce ruthless standardization a conference was held to determine that all new weapon and ammunition development should cease until a new NATO round was determined. This duly emerged as the American-based 7.62-mm (0.30-in) cartridge still in use today. There was no way the EM-2 could be usefully engineered to accommodate this more powerful round, so the decision to adopt the EM-2 was reversed and the British army got the Belgian FN FAL instead.

For a short while the EM-2 was retained as a research tool to determine an 'optimum' cartridge, despite the NATO decision, but that project was eventually terminated. A few rifles were rechambered to accommodate some odd rounds (one was even chambered for the American M1 Carbine 0.30-in/7.62-mm cartridge) but gradually the EM-2s were relegated to museums where some still remain today, examples of yet another intriguing small arms 'might have been'.

Specification
EM-2
Calibre: 0.276 in (7 mm)
Weight: loaded with sling 4.78 kg (10.54 lb)
Lengths: overall 889 mm (35 in); overall with bayonet 1.092 m (43 in); barrel 622 mm (24.49 in)
Muzzle velocity: 771 m (2,530 ft) per second
Rate of fire: (cyclic) 600-650 rpm
Feed: 20-round box

By the end of World War II the British Army needed a new rifle and the EM-2 automatic rifle would have been an excellent choice, but its 'bullpup' layout was regarded with suspicion and the Americans opposed the small calibre (they have since been forced to eat their words).



USA

M14 rifle

The rifle that was eventually to be the standard American service rifle for most of the late 1950s and 1960s had a simple origin but a most convoluted development period. When the American military planners virtually imposed their 7.62-mm (0.30-in) cartridge upon their NATO partners, they had to find their own rifle to fire it, and quickly. For various reasons it was decided simply to update the existing M1 Garand rifle design to fire the new ammunition and to add a selective-fire mechanism. Unfortunately these innovations proved to be less than simple to achieve, for the development period from M1 had to progress through a number of intermediate 'T' trials models. Eventually, in 1957, it was announced that a model known as the **T44** had been approved for production as the **M14** (a planned heavy-barrel version, the **M15**, did not materialize) and the assembly lines began to hum, involving four different manufacturing centres at one time.

The M14 was basically an M1 Garand updated to take a new 20-round box magazine and a selective-fire mechanism. The M14 was a long and rather heavy weapon that was very well made, involving a great deal of machining and handling during manufacture at a time when other weapon designers were moving away from such methods. But the Americans could afford it and the soldiers liked the weapon. In service there were few problems, but the selective-fire system that had caused so much development time was usually altered so that automatic fire could not be produced: the US Army had soon discovered that prolonged bursts overheated the barrel and that ammunition was in any event wasted firing non-productive bursts.

Production of the basic M14 ceased in 1964, by which time 1,380,346 had been made. In 1968 a new version, the **M14A1**, was introduced. This had a pistol grip, a bipod and some other changes and it was designed for use as a squad fire-support weapon producing automatic bursts, but the bursts had to be short as the barrel could not be changed when hot. Also produced as variants were experimental folding-butt versions and a sniper model, the **M21**.

The M14 is still in use with the US armed forces, although by now most are with units such as the National Guard and other reserve formations. As the M14s were replaced by M16s many were passed to nations such as Israel where they remained in combat service until replaced by Galils. Even now many civilian guards carrying M14s can be seen around Israel, guarding schools and bus stations.

Specification

M14

Calibre: 7.62 mm (0.30 in)

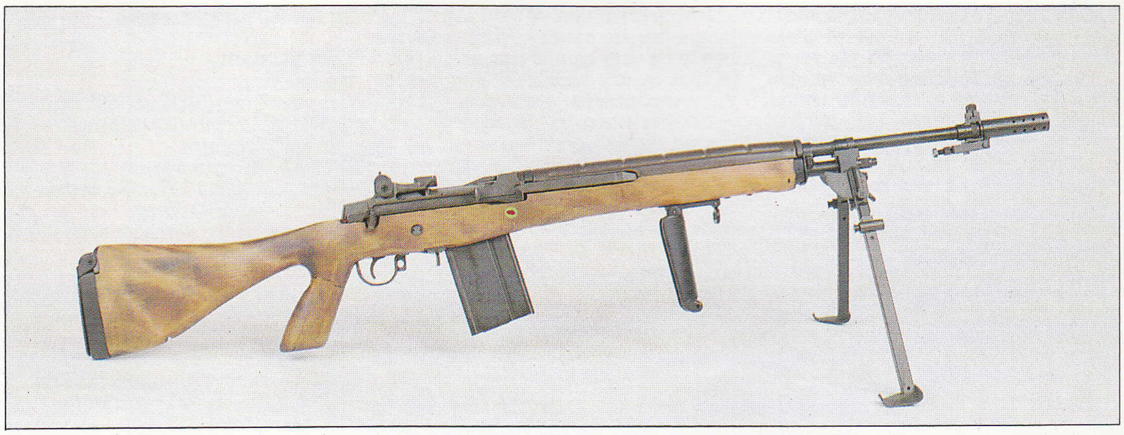
Weight: 3.88 kg (8.55 lb)

Length: overall 1.12 m (44 in); barrel 559 mm (22 in)

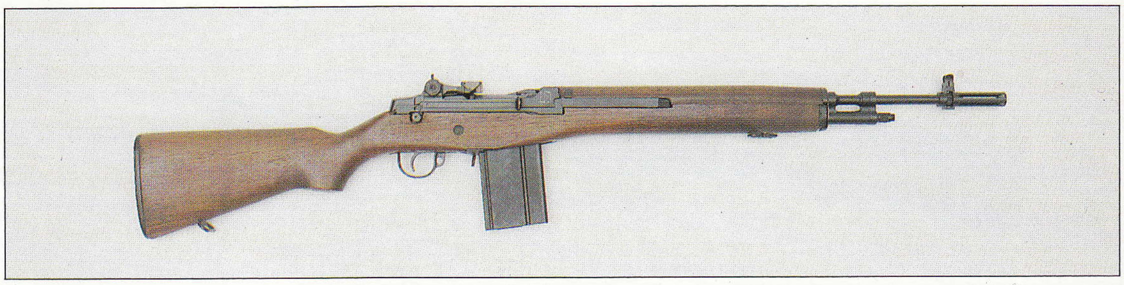
Muzzle velocity: 853 m (2,798 ft) per second

Rate of fire: (cyclic, M14A1) 700-750 rpm

Feed: 20-round box



Above: The M14A1 is the only variant of the M14 to be adopted in any numbers. The rifle is fitted with a straight-line stock, pistol- and fore-grips and mounted on a bipod. It looks and feels like a light machine-gun but is hardly suited to the role, as it has no facility for barrel change.



Below: Once NATO had decided to adopt a standard rifle cartridge, the USA needed a weapon to fire it. Most other nations opted for the versions of the Belgian FN, but the 'not invented here' syndrome reared its head and the US Army received the M14 – basically a modernized M1.

Rebel Philippine soldiers open fire on government forces defending a TV station during the last days of the Marcos regime. Note the spent case ejecting from the M14; this weapon has been supplied to other American allies in the Far East, including Taiwan and South Korea.

USA

Stoner 63 System

Eugene Stoner was one of the most influential and innovative weapon designers of the 1950s and 1960s, and his hand can still be discerned in many weapons in use today. His innovation was such that at one point he was involved in developing a modular weapon system that not surprisingly became known as the **Stoner 63 System**.

Produced not long after Stoner left Armalite Inc. in the late 1950s, the Stoner 63 System was formed from 17 modular units that could be assembled and arranged to produce a whole series of weapons. The basis for the system was the rotary lock mechanism first used on the AR-10 and later on the AR-15/M16 rifles. However, the Stoner 63 System used a different method of gas operation based on a long-travel piston. The only components common to all weapons in the system were the receiver, the bolt and piston, the return spring and the trigger mechanism. To these could be added butts, feed devices, various barrels and such items as bipods or tripods to produce weapons as tactical situations or requirements changed.

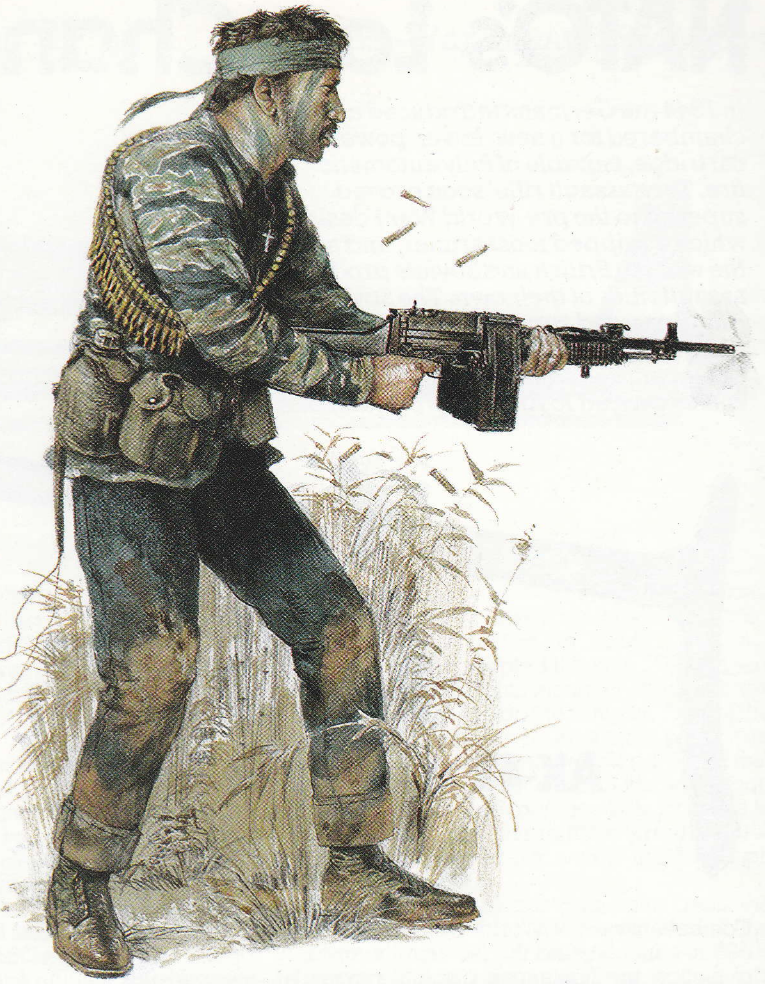
Originally the Stoner System was developed to use the 7.62-mm (0.30-in) NATO cartridge, but when it became clear that the 5.56-mm (0.219-mm) calibre was the future favourite the system was revised to accommodate the lighter round. This made many of the components much lighter, and as a result the weapons too were lighter.

The basic weapon was a carbine with a folding butt, and then came an assault rifle. Magazine- and belt-fed light machine-guns using bipods were next, while the addition of a heavy barrel, belt feed and tripod produced a medium machine-gun. It was even possible to produce a fixed solenoid-fired machine-gun for co-axial use in armoured vehicles.

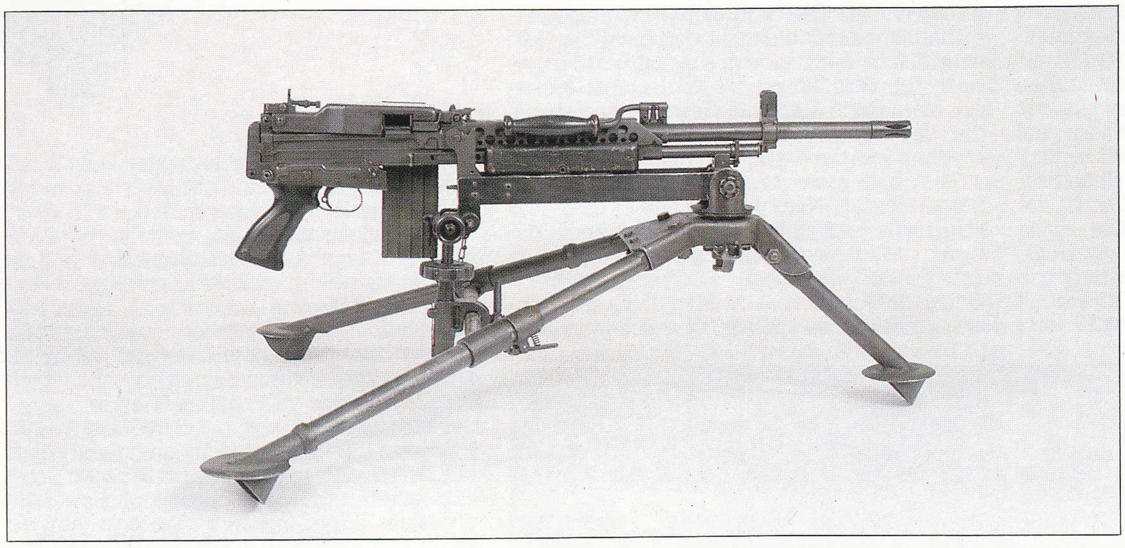
The Stoner 63 System attracted a great deal of attention. The system was placed into small-scale production by Cadillac Gage, under whose aegis Stoner had developed the project. Plans were made with a Dutch firm for licence production, but military interest was not so forthcoming. The US Marines carried out a series of trials and more were carried out in Israel. The system performed well throughout all these trials but nothing resulted. Exactly why this was the result is not easy to determine, but perhaps the main reason was that for a set of components to be produced to perform so many roles a number of the parts had to be something of a compromise and thus less successful than a purpose-built design. The Stoner System gradually faded from the scene and is now no longer offered.

Specification

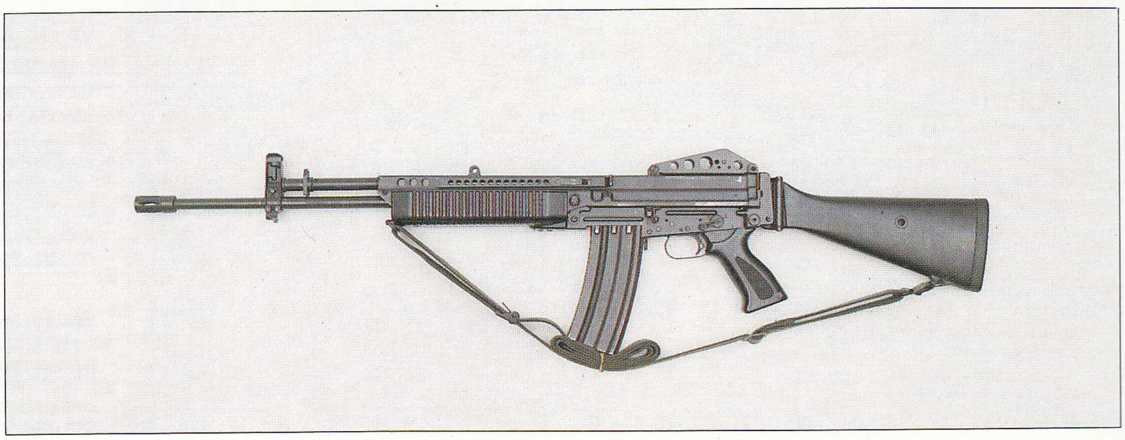
Stoner 63 (assault rifle)
Calibre: 5.56 mm (0.219 in)
Weight: loaded 4.39 kg (9.68 lb)
Length: overall 1.022 m (40.23 in); barrel 508 mm (20 in)
Muzzle velocity: about 1000 m (3,280 ft) per second
Rate of fire: (cyclic) 660 rpm
Feed: 30-round box



Above: The US Navy SEALs (Sea-Air-Land) used the Stoner during the Vietnam war. The SEALs performed all manner of covert operations in South East Asia, many of which remain classified. Their activities in the IV Corps Military Zone (the Delta) were particularly successful.



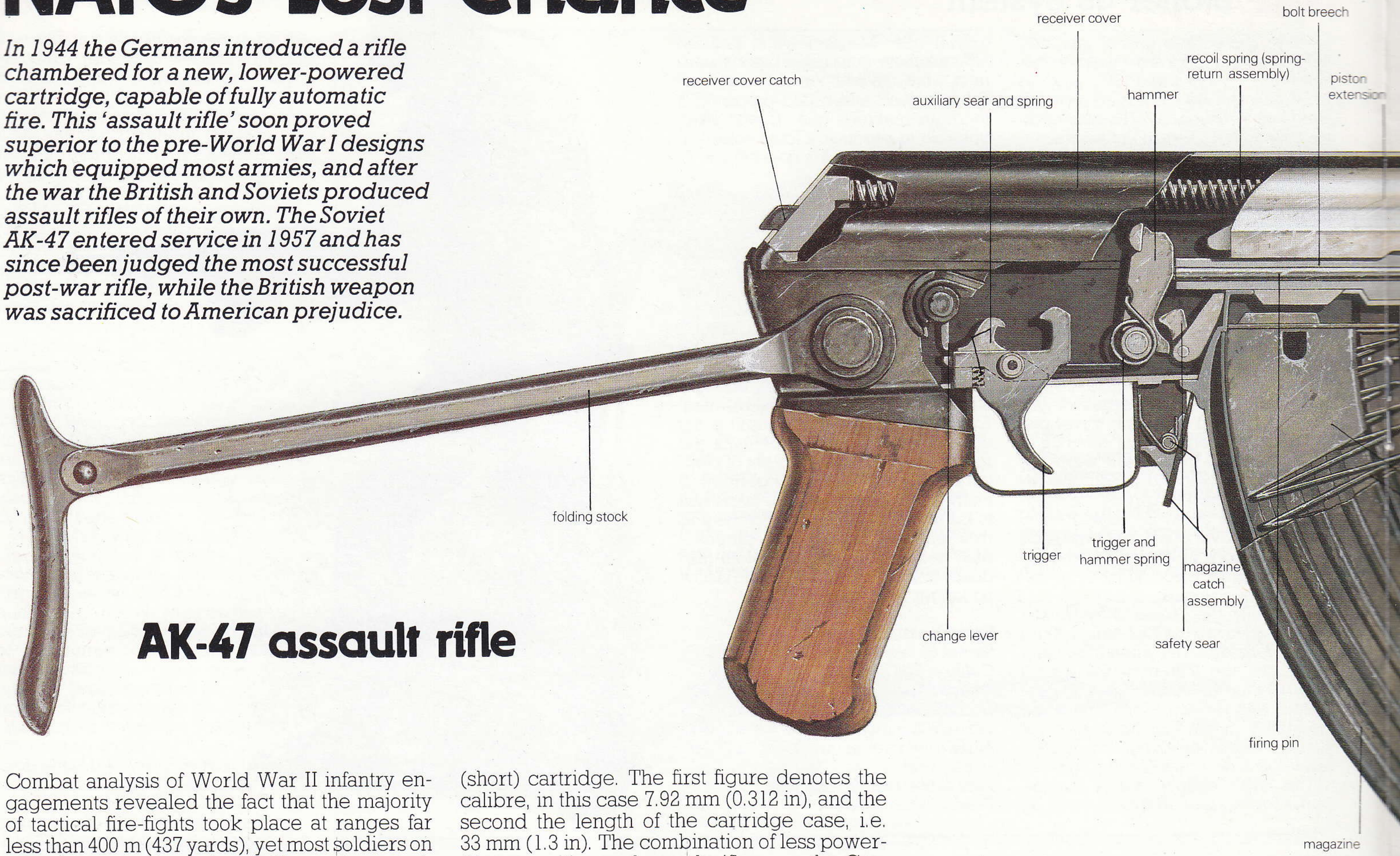
Above: A Stoner is shown mounted on its tripod. The US Marine Corps conducted exhaustive testing of the Stoner system, which led to some improvements being made. Several armies acquired the weapon for trials purposes, but in the event no production orders materialized.



Right: Eugene Stoner produced several innovative designs during the late 1950s; the Stoner system, manufactured by Cadillac-Gage, consisted of 15 assemblies and a tripod, from which a whole range of small arms could be constructed. This is the M63A1 rifle.

NATO's Lost Chance

In 1944 the Germans introduced a rifle chambered for a new, lower-powered cartridge, capable of fully automatic fire. This 'assault rifle' soon proved superior to the pre-World War I designs which equipped most armies, and after the war the British and Soviets produced assault rifles of their own. The Soviet AK-47 entered service in 1957 and has since been judged the most successful post-war rifle, while the British weapon was sacrificed to American prejudice.



AK-47 assault rifle

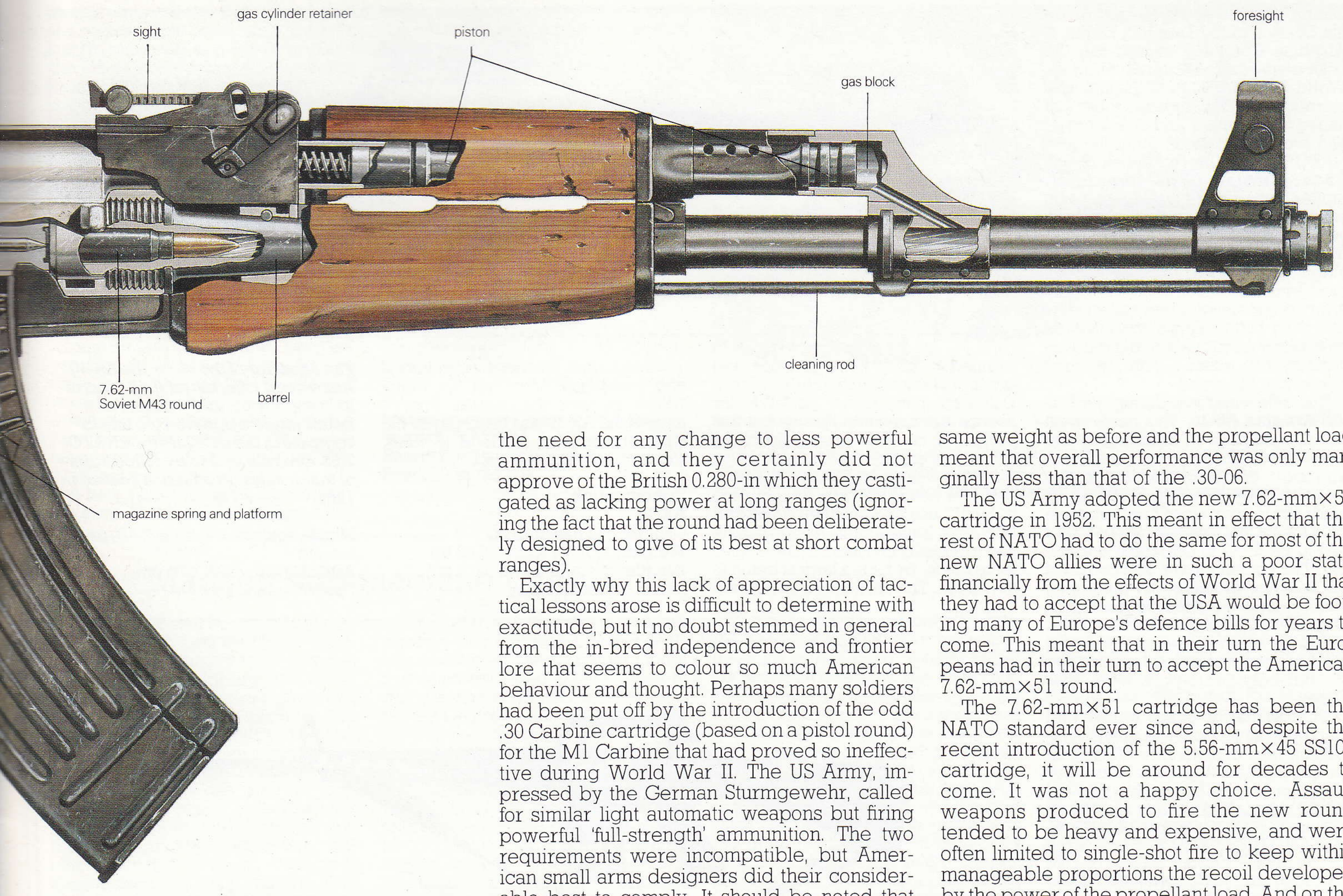
Combat analysis of World War II infantry engagements revealed the fact that the majority of tactical fire-fights took place at ranges far less than 400 m (437 yards), yet most soldiers on both sides were issued with rifles and ammunition having range potentials of 2000 m (2,187 yards) or more. The Germans were first to see that if lighter, less powerful ammunition was developed to be effective only up to actual combat ranges, not only could a soldier carry more ready-to-use rounds but his firepower potential could also be vastly increased by the introduction of selective-fire weapons as the associated recoil forces would be much reduced. The German army took these lesson to heart and introduced the Sturmgewehr assault rifles and their innovative 7.92-mm×33 *kurz* (short) cartridge. The first figure denotes the calibre, in this case 7.92 mm (0.312 in), and the second the length of the cartridge case, i.e. 33 mm (1.3 in). The combination of less powerful ammunition and assault rifle gave the German infantry a vast increase in combat firepower by the introduction of automatic fire for every man. Once again the Germans had shown the way ahead in small arms developments, but they lost the war.

They had, however, taught the Allies an important lesson. Nearly every one of them was using rifle ammunition that dated back decades, and it was abundantly clear that such ammunition would have to be replaced. For a while the Allies were saddled with their existing *matériel* for the simple reason that they already had the manufacturing facilities to turn them out by the million, and also huge stockpiles that must first be consumed. To take on a new type of ammunition would involve vast outlays of money and materials, and few nations were willing or able to envisage such a programme. The development of new ammunition also took time, so it was not surprising that the major conflict of the 1950s, the Korean War, was fought mainly with World War II weapons and ammunition.

There was little prospect of the German *kurz* cartridge being adopted by any of the Allies, but the Soviets were most impressed by it, having been on the receiving end on many occasions. From the *kurz* cartridge they developed their own 7.62-mm×39 round and evolved the SKS and AK-47 rifles to fire it. The 7.62-mm×39 round has proved to be one of the best military cartridges of all time and certainly one of the most used, for it is still in widespread use to this day and seems set fair to remain so for ages to come. It combines good lethality and hitting power at combat ranges, yet is compact and contains a load light enough to enable it to be fired from portable selective-fire weapons.

The Soviets were not alone in developing a

The Soviets lost no time in adopting an intermediate cartridge, but US insistence prevented NATO following suit, forcing Britain to cancel the EM-2. Work continued with bullpup designs such as this prototype Individual Weapon, but only in 1985 has the IW entered service.



new light cartridge. The British used the years after World War II to investigate new combat ammunition to replace their elderly 0.303-in (7.7-mm) rifle round, a type loaded with inefficient cordite propellant and rimmed as well, making it awkward to use in automatic weapons. After a series of trials a new rimless round known as the 0.280-in (actually 7-mm×44) was produced, along with the EM-1 and EM-2 experimental rifles for potential service introduction. The 0.280-in proved to be an excellent cartridge, having a good combat performance combined with light weight and size. All seemed set therefore for the introduction of the 0.280-in cartridge to the British army.

Weapons standardization

Then international politics intruded. The 0.280-in cartridge arrived on the scene about the time the NATO agreement was signed (1949) and the participant nations were bound by the terms of the treaty to adopt a programme of weapons standardization as far as possible, with small-arms ammunition high on the list of priorities. The idea of using a common cartridge throughout the NATO made good sense but it also led to a wrong choice for one basic reason: the Americans were not impressed by the need for any change to less powerful ammunition, and they certainly did not approve of the British 0.280-in which they castigated as lacking power at long ranges (ignoring the fact that the round had been deliberately designed to give of its best at short combat ranges).

Exactly why this lack of appreciation of tactical lessons arose is difficult to determine with exactitude, but it no doubt stemmed in general from the in-bred independence and frontier lore that seems to colour so much American behaviour and thought. Perhaps many soldiers had been put off by the introduction of the odd .30 Carbine cartridge (based on a pistol round) for the M1 Carbine that had proved so ineffective during World War II. The US Army, impressed by the German Sturmgewehr, called for similar light automatic weapons but firing powerful 'full-strength' ammunition. The two requirements were incompatible, but American small arms designers did their considerable best to comply. It should be noted that many American designers were as anxious as any to introduce lightweight ammunition, but with no prospect of the US Army adopting any such round the designers had to produce what the customer wanted.

The then-current American rifle cartridge, known as the .30-06 (actually 7.62-mm×63), was considered ripe for replacement as it dated from 1906, but it was taken as the starting point for a new American round. By cutting the case down to 51 mm (2 in) the designers appeared to go part-way to producing a shorter cartridge, but the bullet remained much the same weight as before and the propellant load meant that overall performance was only marginally less than that of the .30-06.

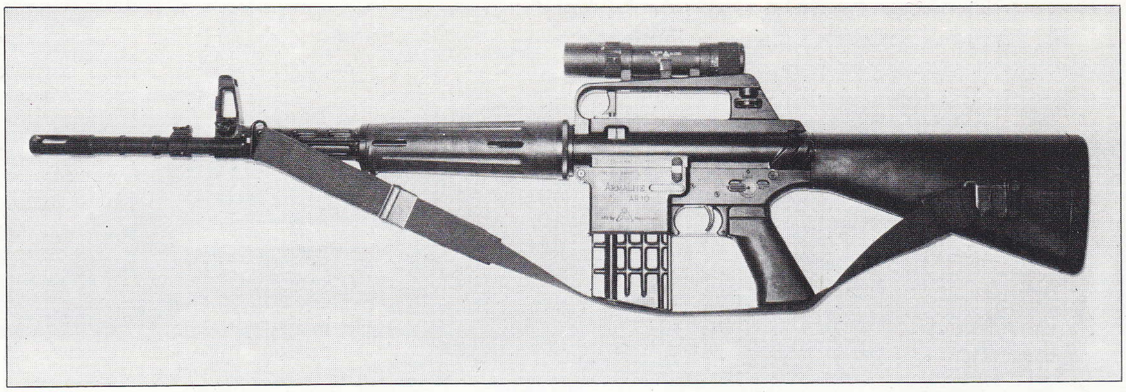
The US Army adopted the new 7.62-mm×51 cartridge in 1952. This meant in effect that the rest of NATO had to do the same for most of the new NATO allies were in such a poor state financially from the effects of World War II that they had to accept that the USA would be footing many of Europe's defence bills for years to come. This meant that in their turn the Europeans had in their turn to accept the American 7.62-mm×51 round.

The 7.62-mm×51 cartridge has been the NATO standard ever since and, despite the recent introduction of the 5.56-mm×45 SS109 cartridge, it will be around for decades to come. It was not a happy choice. Assault weapons produced to fire the new round tended to be heavy and expensive, and were often limited to single-shot fire to keep within manageable proportions the recoil developed by the power of the propellant load. And on the other side of the coin the NATO round remains an indifferent cartridge for use in longer-ranging machine-guns. Soldiers found themselves still limited to carrying only as many rounds (usually about 200) as their World War II counterparts. Only the introduction of the 5.56-mm×45 ammunition has permitted a return to the type of weapons and firepower potential the German *Frontschwein* ('grunts') were using at the end of World War II. Thus the adoption of the 7.62-mm×51 cartridge was a lost opportunity of great significance.

US Navy SEALs seen in Vietnam, 1970, carry their usual mixture of hardware including (on the left) a Stoner 63. This system proved another blind alley for small arms design, originally developed for the NATO 7.62-mm round but revised because the USA adopted 5.56-mm calibre with the M16.

USA

Armalite AR-10 assault rifle



The ancestor of the M-16, the AR-10 was a good rifle, better than most of its competitors, and it deserved a better fate. It appeared too late to compete in the struggle for a NATO 7.62-mm rifle and so had little hope of major sales. Production ceased in 1961.

During 1954 the newly-formed Armalite Division of the Fairchild Engine & Airplane Company started the development of an assault rifle firing the World War II 0.30-in (7.62-mm) rifle cartridge. By 1955 Eugene Stoner had joined the company and development had switched towards using the new NATO 7.62-mm cartridge though the Armalite team, greatly influenced by Stoner, was not restricted to using established small-arms design conventions. The team thus evolved an innovative 'all-in-line' layout with sights above the weapon, but perhaps the most important contribution to small arms design was the reintroduction of the rotary bolt locking system that has now become virtually a standard on subsequent assault rifle designs throughout the world.

The rifle emerged during 1955 as the **Armalite AR-10**. This made great use of aluminium in construction and steel was used only on the barrel, bolt and bolt carrier. This made the weapon light, too light really as its tendency to 'rear' when fired automatically meant that a muzzle compensator had to be fitted to overcome this failing. The cocking lever was on top of the receiver protected by a carrying handle that also carried the rear sights. Originally it was planned that there would be sub-machine gun and light machine-gun variants of the basic AR-10, but only prototypes were produced.

The Armalite team found that marketing its product was rather more difficult than designing it. Tooling up for production was slow and sales were not helped by the fact that the NATO nations had already made their various new rifle decisions by the time the AR-10 appeared. The Dutch seemed to offer hope of sales and arrangements were made with a Dutch company known as NWM for licence production of AR-10s but that project all came to naught, despite a great deal of preparatory work.

All this was a pity, for the AR-10 was really far better than any weapon then in NATO use and far more advanced than most. It was simple, easy to handle and had plenty of potential. Some sales were made, by far the largest being to the Sudan. The Portuguese purchased 1,500 and other batches went to Burma and Nicaragua, some via the Dutch NWM. Perhaps the greatest importance of the AR-10 was that it paved the way for the later AR-15/M-16 rifles. Production ceased in 1961.

Specification

AR-10

Calibre: 7.62 mm (0.30 in)

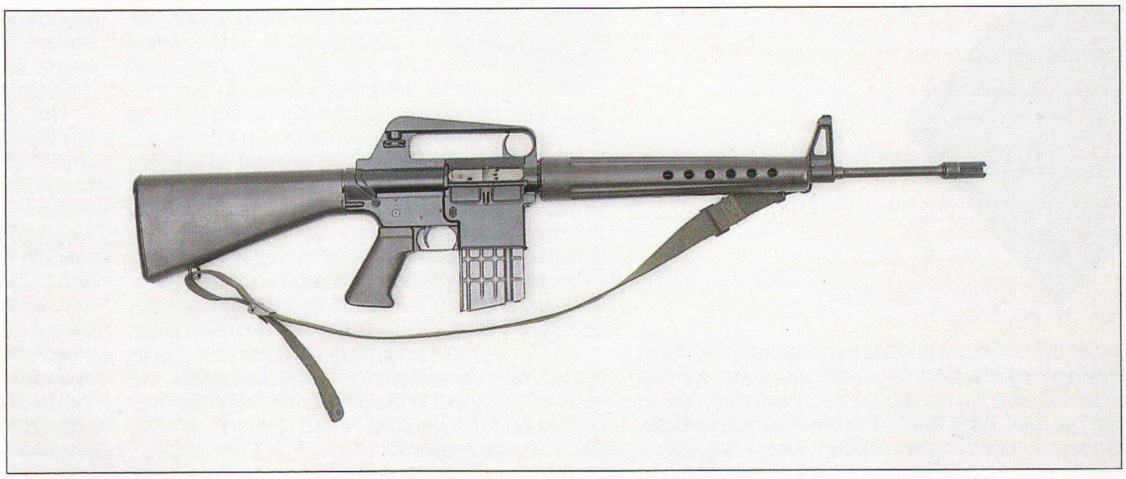
Weight: loaded 4.82 kg (10.63 lb)

Lengths: overall 1.029 m (40.5 in); barrel 508 mm (20 in)

Muzzle velocity: 845 m (2,772 ft) per second

Rate of fire: (cyclic) 700 rpm

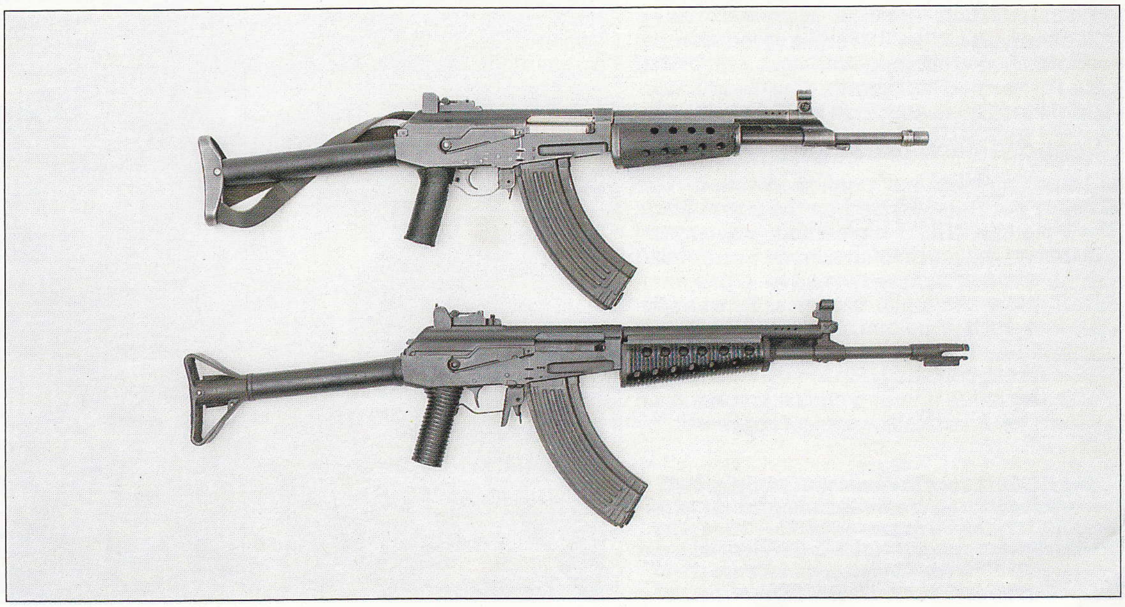
Feed: 20-round box



The innovative AR-10 used aluminium for most of its metal parts, steel being used only for the barrel, bolt and bolt carrier. It was a very light weapon which suffered from pronounced muzzle climb when fired fully automatic.

FINLAND

Valmet m/60 and m/62 assault rifles



The m/62 has different sights to those fitted on the AK-47 and introduced a three-pronged flash eliminator, but the selector lever and safety catch are exactly the same as on the Soviet weapon. In addition to serving with the Finnish army, the m/62 has been bought by Qatar.

Although not a member of the Warsaw Pact, because of its proximity to the USSR Finland inevitably has to go along with the Soviet way of doing things in some matters. So it was when the Finnish army decided to adopt a new service rifle in the late 1950s: not surprisingly it opted for the Soviet AK-47 assault rifle and its ammunition, and the country negotiated a manufacturing licence for both. Once the AK-47 design was in their hands, the ever-active Finnish small-arms designers at Valmet decided to make a few changes and the result was the **Valmet m/60**.

The AK-47 origins can be discerned in the m/60, but the energetic re-working by the Finns resulted in a much better all-round weapon. For a start the m/60 used no wood whatever in its construction, the wooden furniture of the AK-47 being replaced by plastics or metal tubing. The tubular butt of the m/60 was not only easier to produce, it was also more robust and it carried the cleaning tools and equipment. The pistol grip and forestock were cast from hard plastic, while the trigger was left virtually unguarded to allow gloves to be worn when firing, an important point considering Finnish winter conditions.

Other changes from the AK-47 included slightly altered sights, a three-pronged flash hider at the muzzle and a revised bayonet mounting bracket to accommodate the Finnish bayonet, which could also be used as a fighting knife. Internally the AK-47 mechanism was left virtually unchanged apart from a few manufacturing expedients, and the curved magazine and its housing were also left untouched to allow AK-47 magazines to be used.

A later model, the **m/62**, was virtually the same as the m/60 apart from a few extra cooling holes in the forestock and the introduction of a vestigial trigger guard.

The m/60 and m/62 are still used by the Finnish armed forces today. They are excellent weapons that are ideally suited to the tough conditions that the local climate imposes. In design terms they are rated to be much better weapons than the AK-47 from which they were derived, but in ease of production they have been partially overtaken by the introduction of the Soviet AKM.

Specification

m/62

Calibre: 7.62 mm (0.30 in)

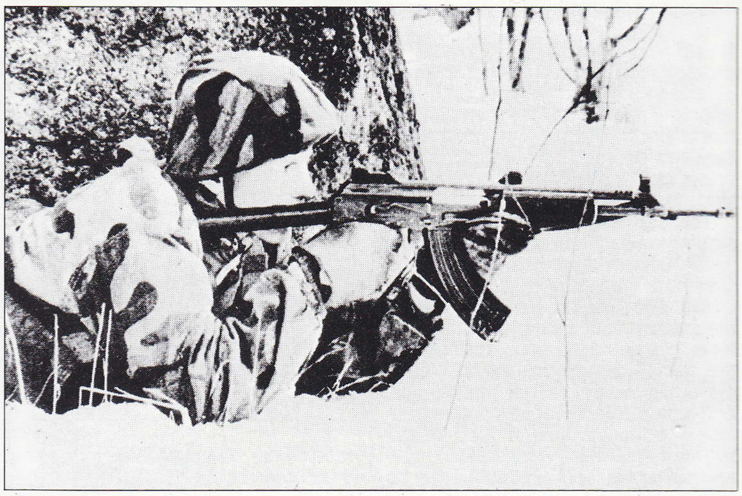
Weights: empty 3.5 kg (7.7 lb); loaded 4.7 kg (10.36 lb)

Lengths: overall 914 mm (36 in); barrel 420 mm (16.54 in)

Muzzle velocity: 719 m (2,359 ft) per second

Rate of fire: (cyclic) 650 rpm

Feed: 30-round box



The m/62 is the Finnish variant of the Soviet AK-47. It uses no wood in its construction and has a tubular butt which, apart from being easy to manufacture, has the added bonus of being able to carry the cleaning tools and equipment.

DENMARK

Madsen sub-machine guns

Almost as soon as the last Germans left Copenhagen in 1945 the Danish Madsen concern returned to its pre-war activities of designing automatic weapons. After a brief excursion into an unremarkable sub-machine gun design known as the **m/45**, the company produced a more successful model known as the **Madsen m/46**. This sub-machine gun used the production techniques pioneered by weapons such as the British Sten and the American M3 'Grease Gun', but allied them to a thorough rethinking of basic design concepts. Thus the m/46 made much use of steel stampings, and these were formed into a remarkably simple and sound design.

For all its innovations the m/46 remained a straightforward blowback weapon. The butt was a simple rectangular-shaped piece of steel tubing that could be folded about a hinge to rest against the side of the receiver; a piece of leather was wrapped around the butt itself to provide some vestige of comfort for the firer. The receiver was square in cross-section as was the bolt, but the main item of note about the weapon body was its construction. The entire receiver was produced in two longitudinal halves, held together by a larger barrel nut. When this barrel nut was undone the short barrel could be removed to allow the two halves to open up (around the butt hinge) to expose the workings. This made the working parts extremely easy to clean and repair, which no doubt added to the weapons' reputation for reliability, a feature further aided by there being no single-shot facility, the m/46 thus being capable of automatic fire only.

The m/46 was not a great sales success, mainly because it was produced at a time when the world small-arms markets were still awash with the residue of World War II. The successor to the m/46 was the **m/50**, and this was rather more successful though differing from the m/46 only in detail. An even later version, the **m/53**, differed mainly in using a curved box magazine instead of the earlier straight versions, and the m/53 could be fitted with an optional barrel jacket that could carry a bayonet.

The main markets for the Madsen sub-machine guns were South America and Asian nations such as Thailand. As a result of their extremely sound design and construction the Madsens may still be encountered today.

Specification

m/50

Calibre: 9 mm (0.354 in)

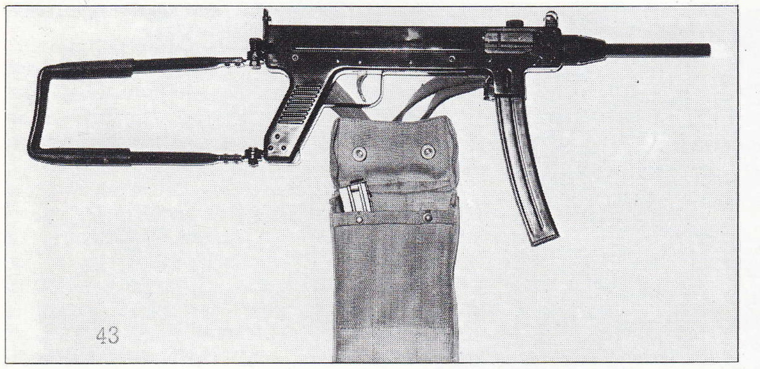
Weight: 3.17 kg (6.99 lb)

Lengths: stock extended 794 mm (31.26 in); stock retracted 523 mm (20.6 in); barrel 198 mm (7.8 in)

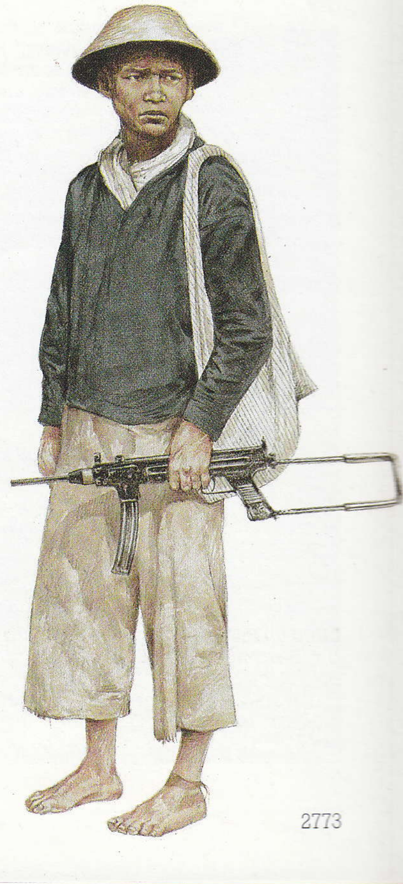
Muzzle velocity: 390 m (1,280 ft) per second

Rate of fire: (cyclic) 550 rpm

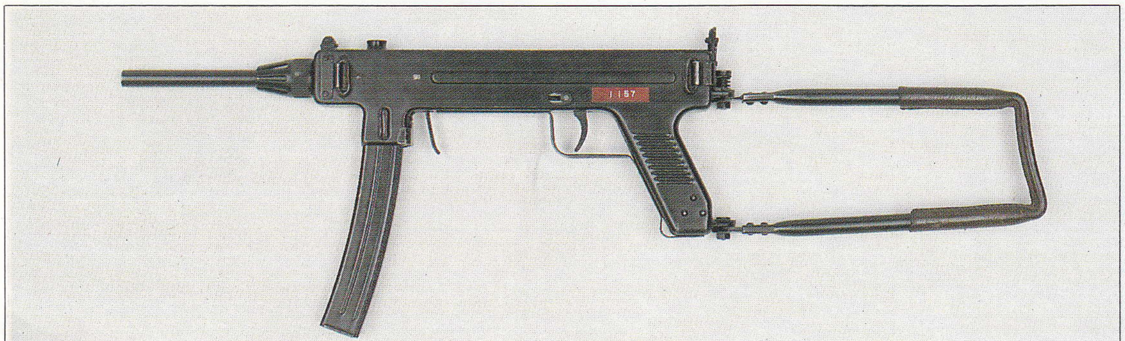
Feed: 32-round box



Left: The Madsen endeavoured to make use of wartime mass production techniques without suffering the usual problems of hastily-put together weapons.



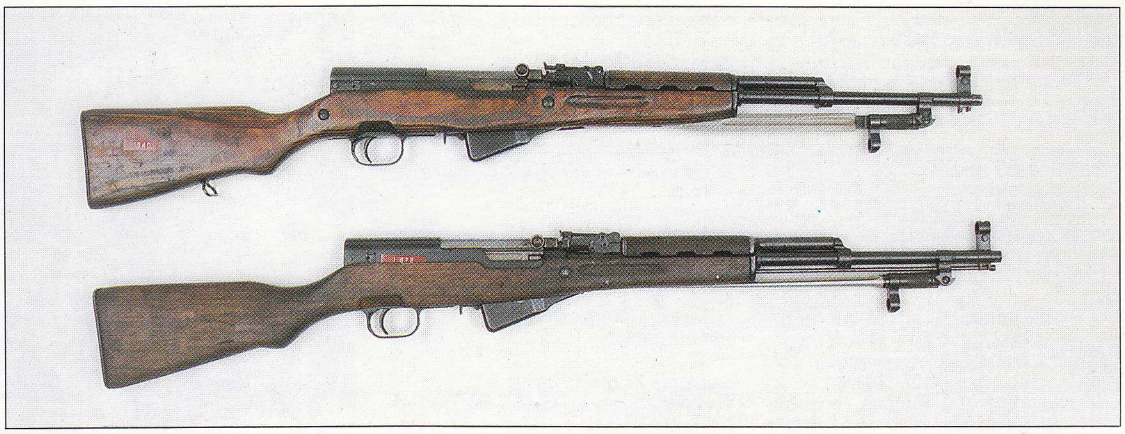
Right: The Madsen was used in Vietnam by Special Forces, and it is seen here in the hands of a Laotian mercenary.



Below: The Madsen's receiver was hinged, and once the barrel nut was removed the two halves could be swung apart, exposing the mechanism. This made the weapon very easy to maintain.

USSR

Samozaryadnyi Karabin Simonova (SKS)



The semi-automatic rifle known as the **SKS** was actually devised during World War II, but was not placed in production until some time afterwards. The designer was Sergei Simonov, who was responsible for many important Soviet small arms, but with the SKS Simonov decided to play things safe and stick to a relatively uninspired design.

The SKS was the first weapon designed to use the new Soviet 7.62-mm (0.30-in) cartridge derived from the German 7.92-mm (0.312-in) *kurz* round. The SKS used a gas-operated mechanism with a simple tipping bolt locking system. So conservative was the overall design that the SKS even outwardly resembled a conventional bolt-action rifle, complete with extensive wooden furniture. A fixed folding bayonet was fitted under the muzzle and the box magazine could hardly be seen: it held only 10 rounds and was fixed to the receiver. Loading was by chargers or insertion of single rounds; to unload, the magazine was hinged downwards, allowing the rounds to fall free. In typical Soviet fashion the SKS was very strongly built, so strong that many Western observers derided it as being far too heavy for the relatively light cartridge it fired. Despite this the SKS was well able to withstand the many knocks and rough treatment likely to be encountered during service use, and the SKS was the standard rifle of the Warsaw Pact nations for years until the AK-47 and AKM arrived in sufficient numbers.

The SKS is no longer in Warsaw Pact service other than as a ceremonial weapon for parades or 'honour guards'. However, it may still be encountered elsewhere as enormous numbers were produced, not only in the USSR but in East Germany and Yugoslavia where it was known as the **m/59**. The communist Chinese still produce a slightly revised version of the SKS known as the **Type 56**, and they are currently offering this version for export. Exactly what success they are having is difficult to determine in an arms market where the AK-47 and its derivatives are all the vogue.

With so many SKS rifles produced it is not surprising that many remain in use throughout the Middle and Far East. Many were encountered by US and South Vietnamese forces during the Vietnam conflict, and from there many have passed into irregular hands. Being simple and robust weapons they are easy to use after a minimum of training and the SKS will be around for many years to come.

The SKS carbine was designed during World War II and produced in vast numbers after the war. The top rifle is a Chinese copy, the Type 56.

Specification
SKS
Calibre: 7.62 mm (0.30 in)
Weight: empty 3.85 kg (8.49 lb)
Lengths: overall 1.021 m (40.2 in); barrel 521 mm (20.5 in)
Muzzle velocity: 735 m (2,411 ft) per second
Feed: 20-round box

USSR

Ruchnoy Pulemyot Degtyarev (RPD)

Soviet designers have always been conservative in machine-gun design and when the **RPD** arrived on the scene in the early 1950s the continuation of a line through the DP, DPM and RP46 light machine-guns was very evident. However the RPD did have some innovations of its own and it has proved to be such a successful weapon that many remain in widespread use to this day.

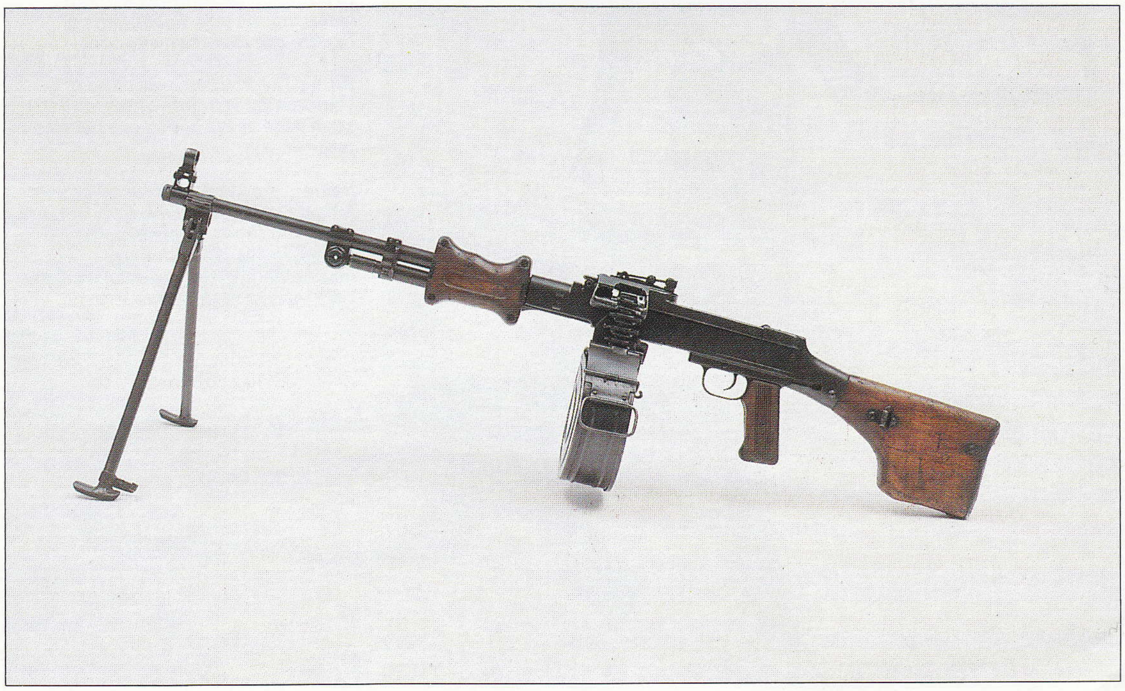
The RPD may be regarded as the squad support weapon equivalent to the AK-47 assault rifle. It fired the same 7.62-mm (0.30-in) short cartridge and used a gas-operated mechanism that had much in common with that of the AK-47. Over the years many modifications have been made to the RPD and its mechanism to improve component life and overall accuracy, but it has always remained a typical Soviet design in that it is robust, simple and efficient.

The RPD uses a belt feed but the problem of ammunition belts flapping around to pick up dirt or snag on anything nearby has been overcome by the introduction of a drum holding a belt of 100 rounds ready to feed. The belt is held at the centre of gravity to assist carrying, but the gas-operated mechanism has a bit of a task to lift and feed a fully-loaded belt and if the belt or mechanism is dirty or even slightly damaged malfunctions can occur. Another potential problem carried over from earlier designs is that the barrel is not removable for changing when hot, and the barrel can become overheated after only a few prolonged bursts. RPD gunners therefore have to be trained to keep bursts short and not too frequent to prevent jamming. The RPD can fire on automatic only.

Although no longer in production in the USSR, the RPD was (and still is) widely issued throughout the Warsaw Pact armed forces, although no longer as a front-line weapon as it has largely been replaced by the later RPK. Elsewhere it is still in the front line and may be encountered in armies as diverse as those of Pakistan, Egypt and Angola. In China the RPD is still being produced as the **Type 56** and is being offered for export to all who will buy. There have been some takers, for the RPD is now likely to be encountered throughout the Middle East, usually in irregular hands. It has been observed in action in Lebanon and is one of the weapons used by the PLO.

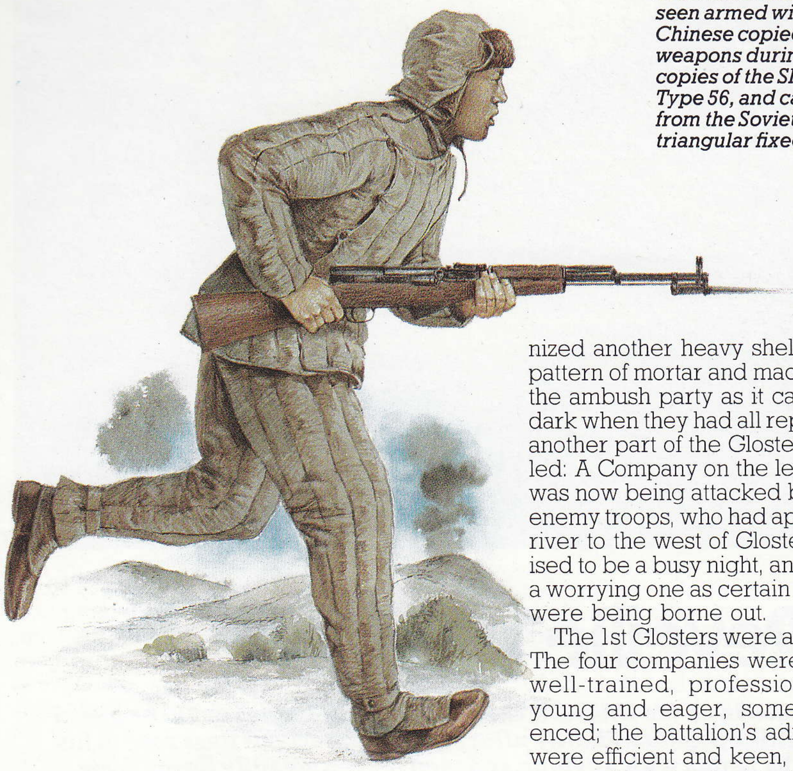
Specification
RPD
Calibre: 7.62 mm (0.30 in)
Weight: gun only 7.1 kg (15.65 lb)
Length: overall 1.036 m (40.78 in); barrel 521 mm (20.5 in)
Muzzle velocity: about 700 m (2,297 ft) per second
Rate of fire: (cyclic) 700 rpm
Feed: 100-round belt

Designed in 1943 to take the new 7.62-mm × 39 cartridge, the RPD was introduced in the 1950s as the squad support weapon to complement the AK-47. The Soviets have no illusions about the standard of conscripts' rifle shooting, and have always relied on their machine-guns.



The Glosters' Last Stand

In the spring of 1951, UN forces were pushing back the Chinese army which had invaded South Korea when the Chinese counter-attacked in overwhelming numbers: in their path were the 800 men of the 1st Battalion the Gloucestershire Regiment.



A Chinese soldier serving in Korea is seen armed with an SKS carbine. The Chinese copied many Soviet weapons during the 1950s; Chinese copies of the SKS are designated Type 56, and can be distinguished from the Soviet original by their triangular fixed bayonet.

On the morning of 22 April 1951, a small group of men lay behind the south bank of the River Imjin just beyond the ruins of the village of Choksong, watching movements beyond the farther bank. Some muttered conversation among them was followed by instructions to be passed back, then in due course a series of tiny flashes and some puffs of black smoke, and the wind brought back the thumps of landing mortar bombs.

'That ought to tickle them up a bit,' said one of the men, while the senior figure considered for a little longer and then issued orders for the laying of an ambush that night. The party then withdrew beyond Choksong to the battalion headquarters.

That night 16 men of C Company, 1st Battalion the Gloucestershire Regiment lay in dark concealment around the southern approaches to the age-old ford which they had recently renamed Gloster Crossing, and eventually heard what they had been listening for: the faint splashing of men wading up to their thighs in fast-running water, making their way towards them.

Both parties were evidently composed of well-trained men. The Glosters remained silent and still, the oncomers moved confidently, their weapons securely held to give no betraying clink, their voices silent, no coughs and no heavy panting; but this care in movement was not to save them. They were now into shallower water (knee-level), and soon the leader would reach the dry mud; but as he lifted his foot clear of water for the first time the rifles and light machine-guns fired, the echoes rang out along the river to east and west, seven Chinese soldiers fell back into the water and were swept away, and behind them another 50 rose to their feet and rushed at the crossing, yelling, screaming, firing their 'burp' guns wildly across the river, intent on sweeping away the ambushers by sheer weight of numbers. Now all the fire was Chinese, for machine-gun and mortar fire erupted from the dead ground to the north of the crossing, and the Gloster patrol was silent for the time being, waiting.

But not for long: as the sound and fury from the north bank rose in a crescendo, shells hissed above them and burst with devastating force and accuracy among the assembled Chinese troops and their support weapons, whose likely positions had been carefully registered days before.

Some Chinese soldiers had reached the river and were now made hesitant by the thunder behind them; the Glosters went into action again with light machine-gun, Sten gun and rifle fire supported by grenades: some figures in the river fell back and were swept away, some near the northern bank turned back, one braver than the rest tried to rally them until he too was shot, and the river was empty again. The patrol checked their weapons, counted their grenades and looked thoughtful; and their commander spoke into his radio.

The Chinese beyond the river massed for their next attempt, the guns opened up on them again, the noise and chaos were repeated; and when the shelling was over the Chinese rose to their feet and came on yet again. And the magazines of the patrol, and their bomb stocks, were that much depleted when the next pause came; and the next; and the one after.

Eventually the patrol commander spoke into his radio and the message was passed to Lieutenant Colonel James Carne, DSO, that the enemy were once more massing in hordes to force the crossing, and that the Gloster patrol were almost out of ammunition.

'Tell them to start withdrawing in three minutes,' ordered the colonel, and quietly organized another heavy shelling, together with a pattern of mortar and machine-gun fire to cover the ambush party as it came back. It was still dark when they had all reported in, but by then another part of the Gloster's front was imperilled: A Company on the left flank on Castle Hill was now being attacked by a sizeable body of enemy troops, who had apparently crossed the river to the west of Gloster Crossing. It promised to be a busy night, and, for Colonel Carne, a worrying one as certain long-suspected facts were being borne out.

The 1st Glosters were a well-found battalion. The four companies were up to strength with well-trained, professional soldiers, some young and eager, some older and experienced; the battalion's administration services were efficient and keen, the liaison with gunners, with brigade intelligence and with air support excellent; weapon and ammunition stocks were high; and logistics controlled and smooth. The battalion could therefore defend itself with expertise and courage against any reasonable offensive, and especially against an

The regimental aid post was situated by the river; the hill in the background was C Company's position. Repeated Chinese human wave attacks eventually overran the hill crest, forcing everyone to fall back to 'Gloster Hill', where the battalion made its last stand.

Taking cover from Chinese mortars in a shelter trench: British troops in Korea were equipped much as they had been during World War II. The Chinese made profligate use of their apparently inexhaustable manpower to overrun British positions.

enemy so basically poorly equipped as the Chinese soldier with his cotton uniform, canvas shoes, rough and uncertain stick grenades, elderly rifles and 'burp' guns.

But on the Imjin the Glosters faced one insuperable problem. Had all the grenades and mortar bombs, shells and rockets, Bren, Sten and rifle magazines, Vickers belts and signal flares been counted individually and added up, and to them been added the numbers of men and the numbers of weapons on the Glosters' establishment, the total would not have reached the number of Chinese soldiers the enemy commander had at his disposal, and whom he was apparently quite prepared to see killed.

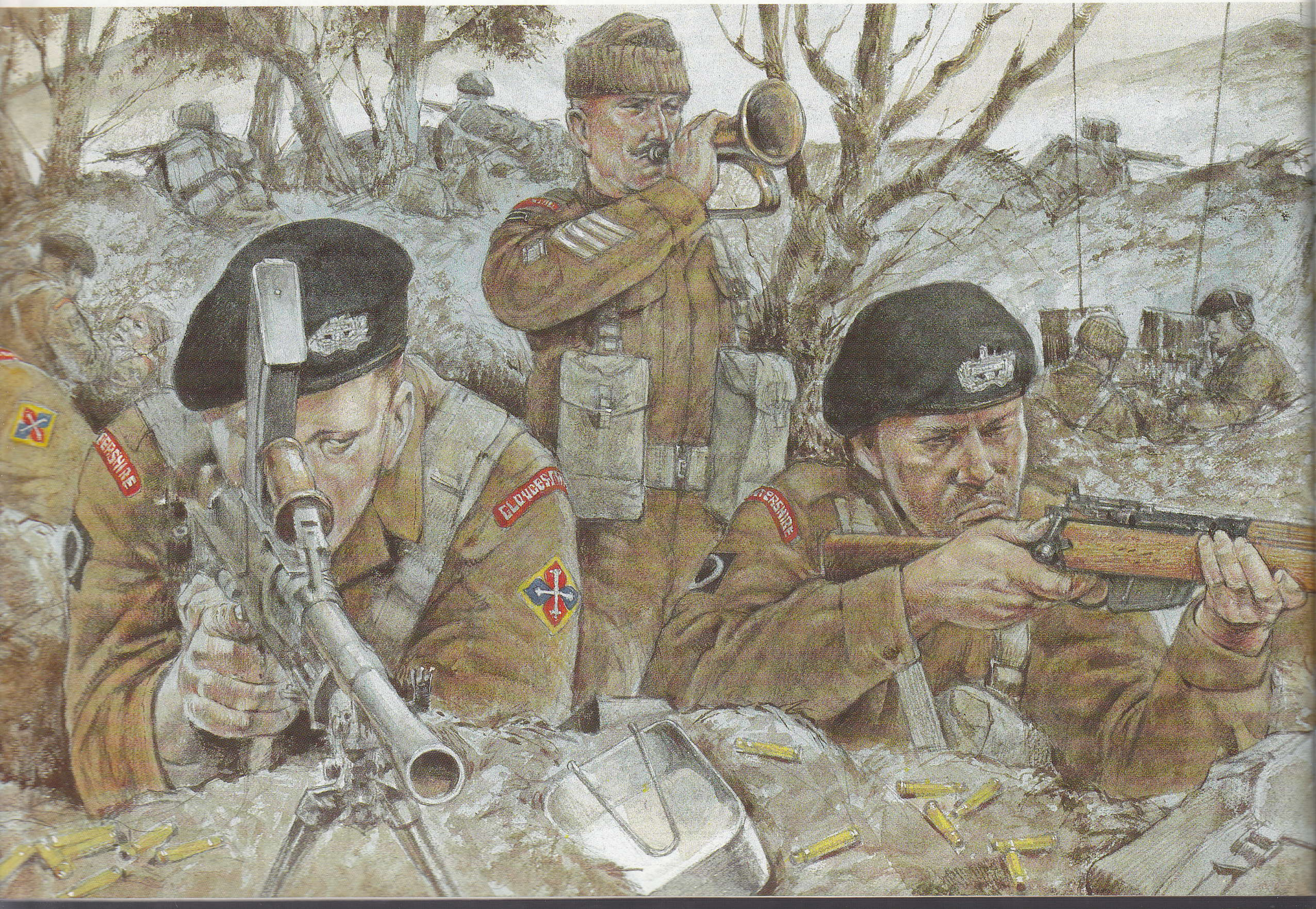
First ambush

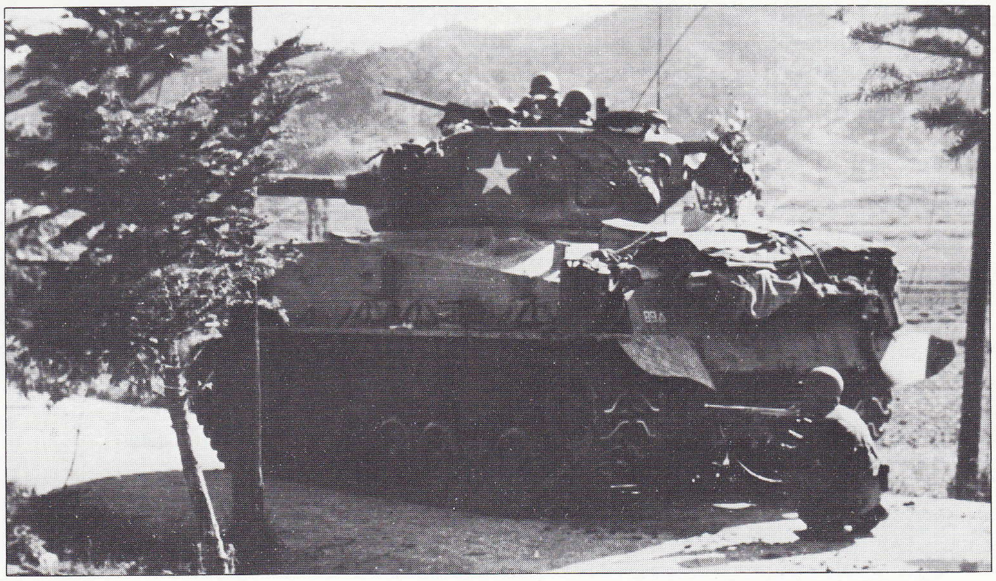
The Glosters stood on one of the main roads back to Seoul, and Seoul was the prize for which the Chinese command was prepared to sacrifice any number of men. And on 22 April 1951 three large infantry divisions (the 187th, 188th and 189th) were waiting in the country to the north of Gloster Crossing, poised to remove the 800 men who blocked their way. The pattern of that first ambush was to be the pattern of the battle which followed.

By dawn both A Company on Castle Hill and D Company just east of the road had been

Imjin Reveille

As the Chinese closed in on the Glosters, the sound of their bugles could be heard clearly from the British position. Shortly after dawn Drum-Major Buss rose to his feet in retaliation: he began with Reveille and then played steadily through his repertoire, from Defaulters to Officers Dress for Dinner and from The Last Post to Lights Out. The only call he did not sound was Retreat.





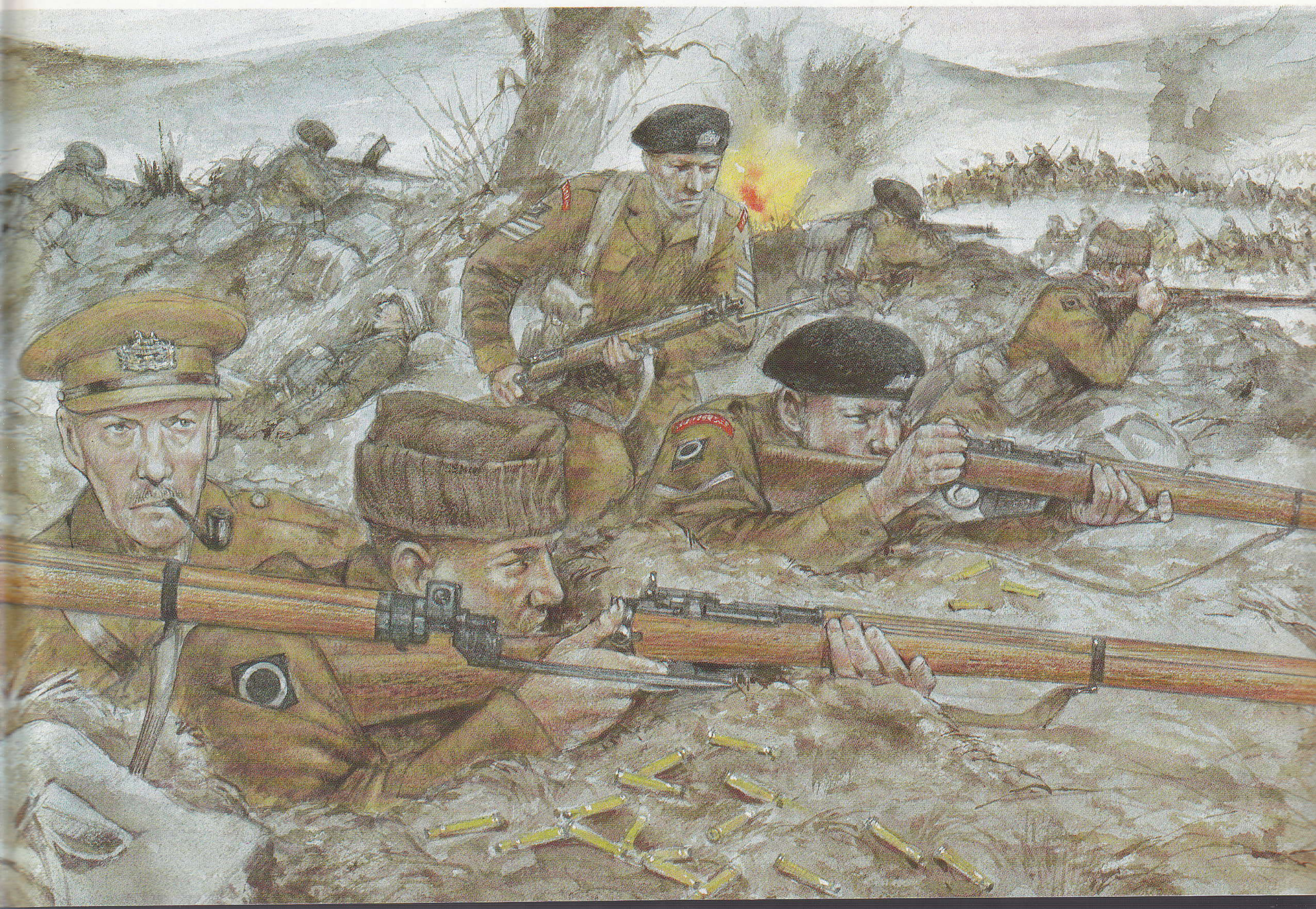
Although the USA provided the bulk of UN forces in Korea, many nations provided contingents. The last attempt to relieve the Glosters was made by a Filipino battalion and the 8th Hussars. Here a Turkish infantryman takes cover behind a US tank.

under attack for nearly six hours: the ground in front of both was littered with Chinese dead, the companies themselves had sufferd inevitable losses, and their ammunition boxes were emptying fast. A Company was swept off Castle Hill at one time, but Lieutenant Phillip Curtis, though wounded, limped across open ground to lob a grenade into a machine-gun nest, thus allowing some of his men to go back for a while and winning himself a posthumous Victoria Cross; but by mid-morning A and D Companies were being swamped by the tide of enemy soldiers, the medics at the regimental aid post were working at full blast (a helicopter came in to take the worst cases out) and Colonel Carne ordered B Company to move carefully and unostentatiously back towards the huge bulk of Kamak-san Hill which dominated the area.

All through that day (23 April) the whole battle area echoed and re-echoed to the same patterns of noise. A period of quiet followed by a burst of firing, then more and more firing interspersed with mortar fire, a gradual build-up of heavy gunfire, the screaming and yelling of the final charge in a climax of noise, then gradually quiet back again for a while, then a blast of artillery once the Chinese began massing again, then quiet. Then the firing would start again. By nightfall, the Gloster positions had been drawn tighter, and Colonel Carne was pondering the latest news: Chinese had infiltrated through on both flanks and had cut the road behind him.

What he was not told then was that the Chinese 187th Division had been so decimated by the action that day that it had been withdrawn, its place being taken by both the 188th and 189th Divisions.

By midnight the Chinese had found the new positions of B Company, and although they misjudged their first assault and drove across at an angle (with even more devastating casualties then ever) they soon corrected the direction and the night's battles began in earnest. By dawn they had driven in between B and C Companies, the battalion adjutant had burned the codebooks, and the secret equipment had been wrecked; and shortly after 07.00 the colonel hurriedly grabbed a rifle and some grenades and personally dealt with a group of Chinese who had crept along a ridge to within



attacking distance of the HQ. They might lack warm clothing and first-class weapons, but the Chinese had all the initiative, courage and eye for concealment of excellent soldiers.

Later that morning news came over the radio that a Filipino battalion and a Centurion tank troop of the 8th Hussars were breaking through towards them from the south; later still the news came through that both formations had been blocked and beaten off by the Chinese who held the roads behind them. The Glosters' strength was now down to 400 men, there were many wounded, they were short of ammunition, the radio batteries were weakening every hour, and by dusk thirst was plaguing everyone. The colonel had by now withdrawn the survivors into a tight circle around the top of Hill 235.

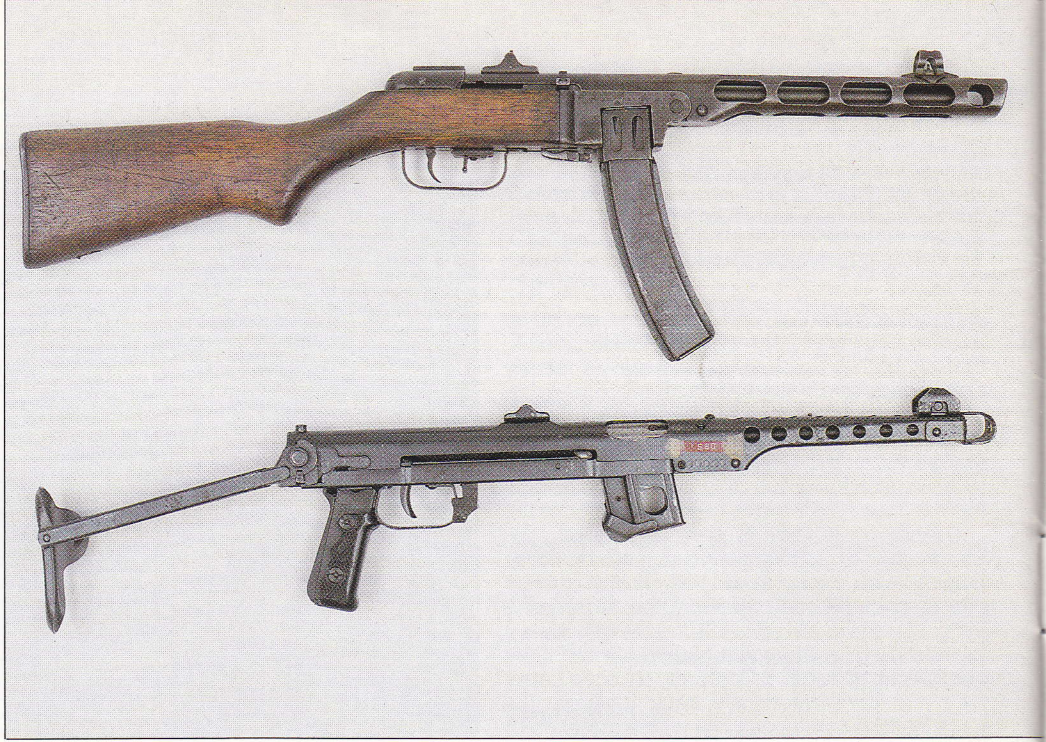
Bugle battle

Most of the night was spent listening to the same noises as before, but punctuated now by raucous and incomprehensible bugle calls from the Chinese positions; shortly after dawn the Glosters' drum major rose majestically to his feet and blew every call in his repertoire from 'Reveille' to 'Defaulters' with the exception of 'Retreat', and after that the Chinese bugles were silent. At 09.00 the adjutant threw out a purple marker, and a flight of US Lockheed F-80s dropped a spectacular carpet of napalm with pinpoint accuracy across the ground in which the latest massing of Chinese troops was taking place, then another over the marked positions of all Chinese machine-gun and artillery posts, from which no more fire came. And as the F-80s flew away, another 1,000, or 3,000 or maybe 10,000 cottonclad soldiers rose to their feet beyond the scorched area and padded forward through the smoking scrub to press again at the Gloster positions.

Shortly afterwards, three transport planes were seen flying towards the area and the Glosters were split between hope that this was the replenishment of their armoury and fear that it would fall outside their now even further constricted circle and into enemy hands. But the transports flew past them and farther east long the line of the river, where more United Nations formations were in pressing need of resupply and, it was judged, more able to put it to good use. Then came the news that no one could get through to the Glosters, their gun-line was itself under attack and that every man should endeavour to make his own way back.

Some 40 men and four officers of D Company did eventually reach brigade; ironically this was because they had been well out in front and there was only one direction for them to move: to the north over the river, then to circle back. All the survivors of the other companies tried to escape directly south: 530 of them were taken prisoner, of whom 150 were seriously wounded. But the Glosters had given time for the regrouping of the UN I Corps, which was eventually able to halt the Chinese offensive before it could reach Seoul.

Colonel Carne was later awarded the Victoria Cross, and the American Presidential Unit Citation was awarded to the 1st Battalion, the Gloucestershire Regiment.



Above: The most common weapon carried by Chinese infantrymen in Korea was the PPS and PPSh series of sub-machine guns. China directly copied these crude but effective weapons from the Soviet originals.

Above: The harsh mountainous terrain of Korea made it possible for small units to dominate a wide area – provided they had enough bullets.

Above: Russia supplied China with large numbers of T-34s, which proved no match for US and British tanks in their rare encounters.

The boot on the other foot: two Chinese soldiers surrender to one of the Glosters. Note the typical quilted cotton kit worn by the Chinese on the right. After four days of valiant resistance, the surviving Glosters tried to break out to the south but were compelled to surrender. Less than 50 men escaped back to the Allied lines.

USSR

Avtomaticheskiy Pistolet Stechkina (APS)

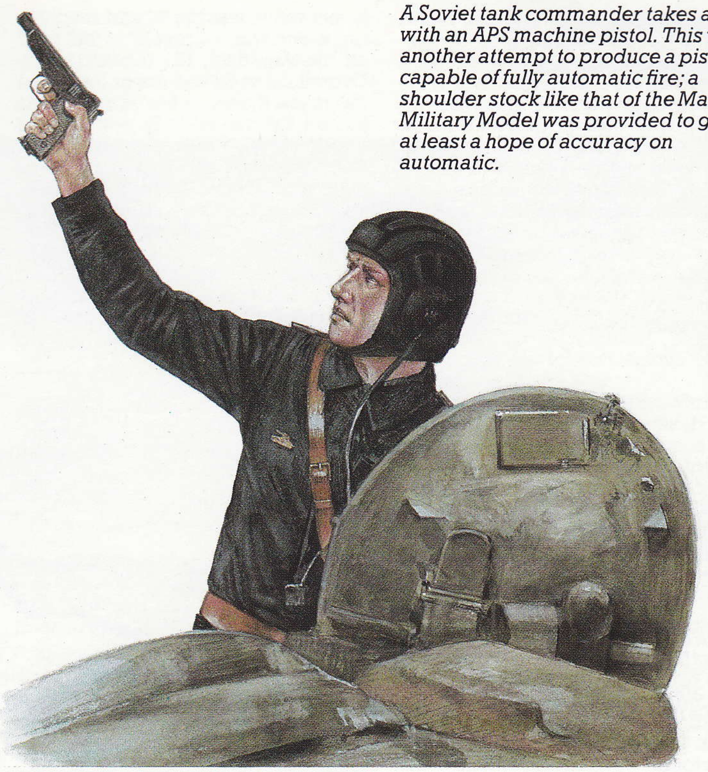
The pistol known to the West as the **Stechkin** and to the Soviet bloc as the **APS** fell into the category known as machine pistols. Although it resembled a conventional automatic pistol it had a fire-selection mechanism that allowed it to fire fully automatically, i.e. in bursts. Machine pistols were much in vogue in the year before World War II, but operational experience soon showed them to be somewhat less than effect other than at extremely short ranges: they were also very wasteful of ammunition. This waste was caused by the fact that as soon as the trigger was pulled the recoil forces forced up the muzzle away from the target.

It was therefore something of a surprise when the Soviets produced the APS during the decade after World War II. It seems that the APS was intended more as a police than a military weapon, but many were used by Warsaw Pact front-line forces. The APS had a magazine holding only 20 rounds, a factor which limited any burst that might be fired. The round used was the then-standard Soviet 9-mm (0.354-in) automatic type used with Soviet sub-machine guns. These were really too powerful for the APS's blowback system and made the violent recoil of the weapon even more pronounced. In an attempt to control the recoil the Soviet designers intended the pistol to be used with a bulky wooden holster acting as a shoulder butt. This holster was almost identical to the old 'broomhandle' Mauser component, which no doubt acted as the starting point for the whole APS design, but the butt was bulky and awkward to use, even if it did allow aimed fire up to 200 m (219 yards) and contain the pistol's cleaning tools and equipment.

The APS had a relatively short career in Soviet terms. It was issued throughout the Warsaw Pact armed forces, but it was never liked and was gradually relegated from front-line use to second-line duties. Today it is still around, but usually in the hands of border guards and other such paramilitary forces. Many have found their way into the hands of terrorists/freedom-fighters who are often attracted by the APS's volume of fire rather than its combat efficiency.

Specification

APS
Calibre: 9 mm (0.354 in)
Weights: empty 1.03 kg (2.27 lb); empty with stock 1.58 kg (3.48 lb)
Lengths: overall 225 mm (8.86 in); barrel 127 mm (5 in)
Muzzle velocity: 340 m (1,115 ft) per second
Rate of fire: (cyclic) 750 rpm
Feed: 20-round box



A Soviet tank commander takes aim with an APS machine pistol. This was another attempt to produce a pistol capable of fully automatic fire; a shoulder stock like that of the Mauser Military Model was provided to give at least a hope of accuracy on automatic.

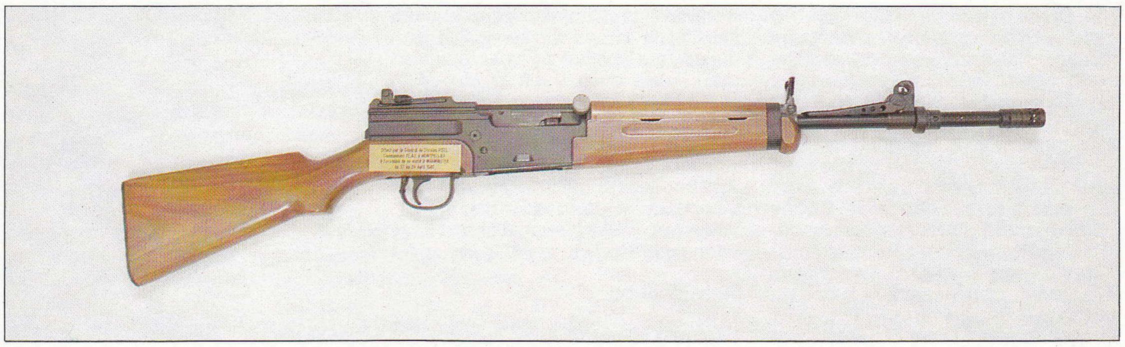
FRANCE

Fusil Mitrailleur Modèle 49 (MAS 49)

The **Fusil Mitrailleur Modèle 49** (**MAS 49**) was one of the first semi-automatic rifles to enter service, and although resembling the bolt-action MAS 36, and indeed using the same two-piece stock, it was not merely an automatic version of the MAS 36 but a completely new design. At over 4.5 kg (10 lb) it is no lightweight, but its strength proved invaluable in the campaigns in Indo-China and Algeria.

The MAS 49 is a gas-operated weapon, but uses no cylinder or piston; instead, some of the propellant gas is deflected into a tube and conducted to the bolt carrier where it expands, forcing the carrier back. This type of system is generally eschewed by gun designers because it can produce excessive fouling, but the MAS 49 has not suffered unduly. The breech is locked in the same simple manner as on the Fn mle 49, namely by tilting the breech block. Unusually, the MAS 49 has an integral grenade launcher, with a sight fitted on the left hand side.

The MAS 49 was modified in 1956 to produce the **MAS 49/56** which is still in service with units of the French army although it will eventually be completely replaced by the FA MAS. The MAS 49/56 is easily distinguished from the earlier weapon; the wooden forestock is much shorter and the barrel has a combined muzzle-brake/grenade-launcher with raised foresight. The length of the whole weapon was reduced by 90 mm and that of the barrel by 60 mm. The French obstinately stuck with the 7.5 mm ×54 M 1929 cartridge, although a few MAS 49/56s were experimentally modified to fire standard NATO 7.62 mm. Armour-piercing ammunition was produced, but has proved very unkind to barrels.



Above: This MAS 49/56 was presented to the Weapons Museum at the School of Infantry, Warminster. The MAS 49/56 gas-operated self-loading rifle has served the French army for nearly 30 years, although it is now being replaced by the FA MAS.

Right: Legionnaires of the 2nd REP are seen armed with (left) a MAT-49 sub-machine gun and (right) a MAS-49/56 self-loading rifle, which can be used as a grenade launcher. The MAS 49/56 fires the French 7.5-mm ×54 cartridge. An armour-piercing round is available as well as standard ball and tracer.

Specification

Fusil Mitrailleur Modèle 49
Calibre: 7.5 mm (0.295 in)
Weights: (without magazine) 3.9 kg (8.6 lb); (loaded) 4.34 kg (9.52 lb)
Lengths: overall 1010 mm (39.76); barrel 521 mm (20.51 in)
Muzzle velocity: 817 m (2,680 ft) per second
Feed: 10-round box

CZECHOSLOVAKIA

Samonabiject Puska vz 52

For a few years after the end of World War II Czechoslovakia was a completely independent nation and for a while returned to the importance of the pre-war days when its armament industry was one of the leaders in Europe. One of the small-arms results of this post-war period was a 7.62-mm (0.30-in) self-loading rifle known as the **Samonabiject Puska vz 52** (vz for *vzor*, or model) that followed many of the design trends indicated by the World War II German automatic rifles. The Czechs also developed a new short assault rifle cartridge (also known as the vz 52) based on German *kurz* cartridge experience for use in the new rifle.

As always the Czechs followed their own design paths and the vz 52 rifle had some unusual features, not the least of which was a method of tipping the bolt to lock the mechanism. There was also a permanently-fixed bayonet, and the 10-round box magazine was filled using chargers. The gas-operated mechanism used a gas piston system wrapped around the barrel. Hardly innovative was the trigger mechanism which was a direct lift of that used on the American M1 (Garand) rifle. Overall the vz 52 was rather heavy but this made it easy to fire as recoil was limited. Even so the vz 52 took up quite a lot of manufacturing potential, and was really too complex a weapon for the period. Only the Czech army took the vz 52 into service for a while, and when other better weapons came along (such as the vz 58 assault rifle) the vz 52s were withdrawn and sold on the international arms markets, so some may still turn up in terrorist/freedom-fighter use.

By the time the vz 52s were deleted Czechoslovakia had been drawn into the Soviet sphere of influence. The Czech 7.62-mm vz 52 cartridge had nothing in common with the Soviet equivalent, although both had been designed from the same starting point. The Soviet military authorities were very strict regarding standardization throughout the armies under their control, and the Czechs were thus forced to abandon their cartridge and convert to the Soviet equivalent. Since the Czech and Soviet short cartridges were far from interchangeable this meant the vz 52 rifles had to be modified accordingly and late vz 52s using the Soviet ammunition were known as the **vz 52/57**.

Specification

vz 52

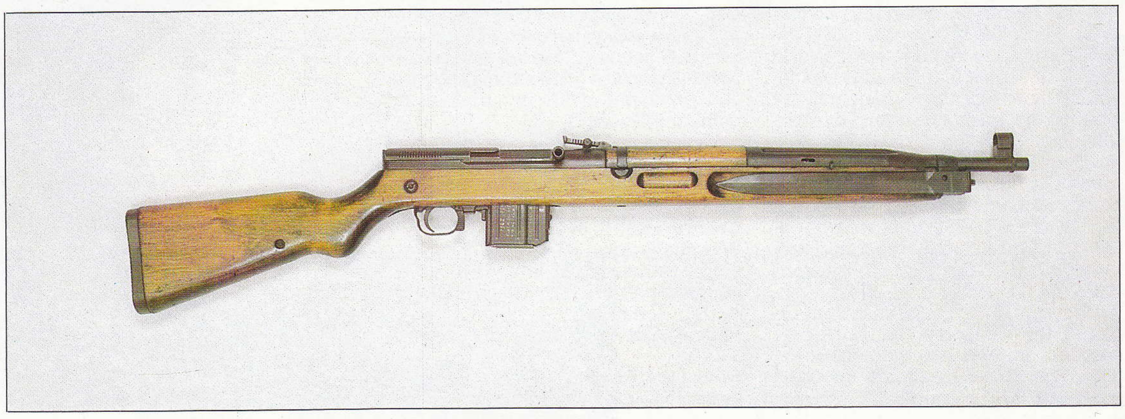
Calibre: 7.62 mm (0.30 in)

Weights: empty 4.281 kg (9.44 lb); loaded 4.5 kg (9.92 lb)

Lengths: overall, bayonet folded 1.003 m (39.49 in); overall, bayonet extended 1.204 m (47.4 in); barrel 523 mm (20.6 in)

Muzzle velocity: about 744 m (2,441 ft) per second

Feed: 10-round box



In the brief interlude between liberation from the Germans and take-over by the Russians, Czechoslavakia resumed production of indigenously designed small arms. The vz 52 fired a 7.62 mm×45 cartridge.

CZECHOSLOVAKIA

Lehky Kulomet vz 52 and Kulomet vz 59

The Czech ZB 26 light machine-gun was one of the major small-arm design successes of the years between the world wars (it led to the Bren Gun and its present-day derivatives), so it was no surprise that once the Czech small-arms industry re-established itself after World War II the design was used again as the basis for a new weapon. This emerged in time as the **Lehky Kulomet vz 52** (light machine-gun model 52) that carried over many features of the pre-war ZB 26 with the addition of a rather complicated belt or box magazine feed system. The new weapon retained many of the pre-war manufacturing methods of 'machining from the solid' so that although the weapon was reliable and robust it was also difficult to make and correspondingly expensive. The vz 52 was produced to fire the Czech short 7.62-mm (0.30-in) cartridge, but this had to be changed to the Soviet equivalent once the Soviets took over Czechoslovakia. Weapons chambered for the Soviet cartridge were known as the **Lehky Kulomet vz 52/57**.

By 1959 the Czechs had learned that the complex belt/magazine feed system was more trouble than it was worth and engineered it out of the design to produce the **Kulomet vz 59**. The opportunity was also taken to convert the design from that of a light machine-gun to a general-purpose machine-gun. This was done by the adoption of interchangeable light and heavy barrels and the introduction of a heavy tripod for the sustained-fire role. Another difference was the change from the short cartridge to the more powerful Soviet standard 7.62-mm rifle cartridge. Some alterations were also made to manufacturing techniques.

All these changes made the vz 59 into a more flexible and powerful weapon. It is still in service today with the Czech armed forces and is produced in a special co-axial tank version. It has even been produced in export form to chamber NATO 7.62-mm ammunition. Fitted with a light bipod it is used in the light machine-gun role, fitted to a heavy tripod it becomes a heavy machine-gun; the same tripod can be adapted for the anti-aircraft role. Various optical sights have been produced for use with the vz 59.

Specification

vz 59

Calibre: 7.62 mm (0.30 in)

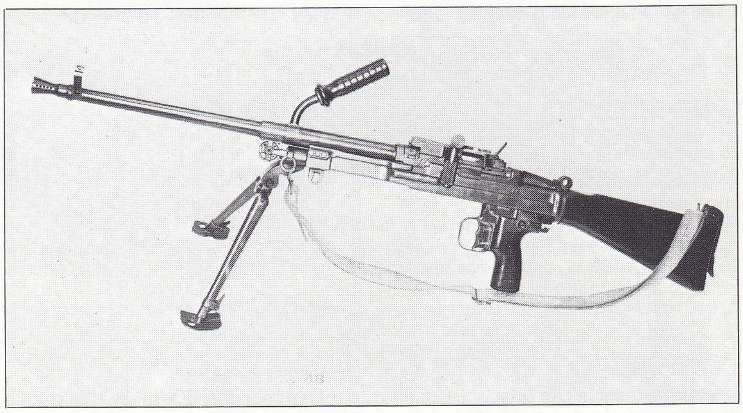
Weights: on bipod 8.67 kg (19.1 lb); on tripod 19.24 kg (42.4 lb)

Lengths: with heavy barrel 1.215 m (47.8 in); with light barrel 1.116 m (43.94 in); heavy barrel 693 mm (27.28 in); light barrel 593 mm (23.35 in)

Muzzle velocity: heavy barrel 830 m (2,723 ft) per second; light barrel 810 m (2,657 ft) per second

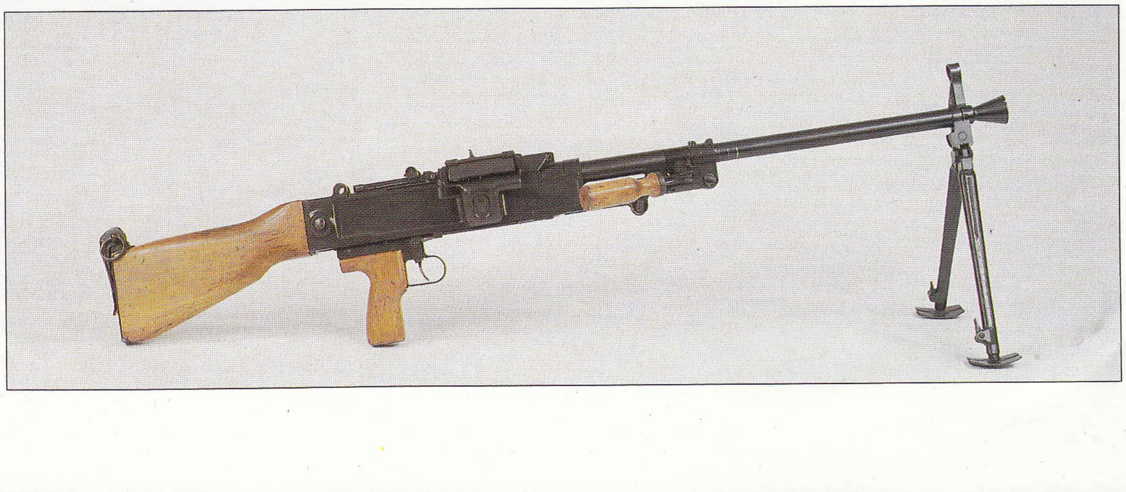
Rate of fire: (cyclic) 700-800 rpm

Feed: 50-round belt

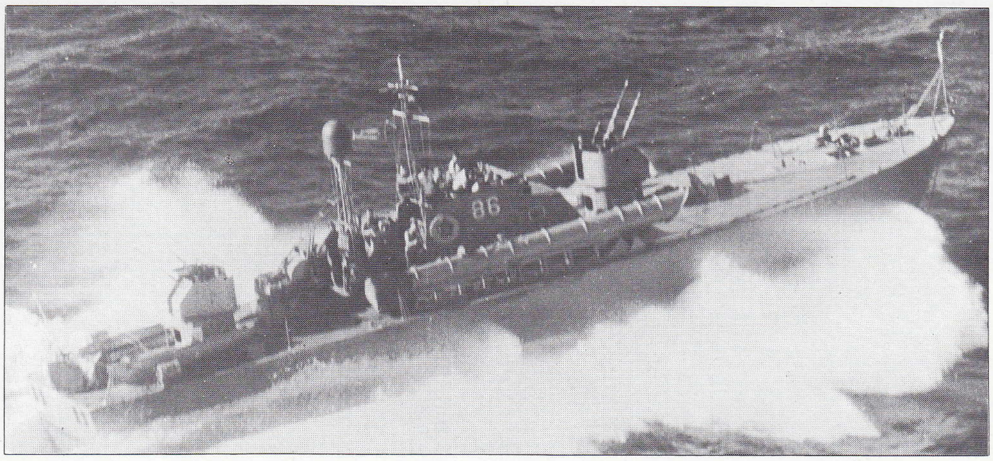


Above: The vz 52 light machine-gun was the last Czech development of the pre-war ZB 26, which was developed into the British Bren gun. It was a complicated gun to produce, and after the Soviet take-over it had to be converted to fire Soviet ammunition.

Below: The vz 59 replaced the vz 52. It was a true general purpose machine-gun, with different barrels for the squad support and sustained fire roles. It is a simpler design than its predecessor and is considerably easier to manufacture.



Cuba



Cuba has the highest annual defence expenditure in the Caribbean and Central America (£150 million, 1984-5). The navy is the smallest of the services but is well funded and quite efficient; older Soviet vessels like this P6 fast attack craft are now being replaced by more modern ships, particularly submarines.

The island of Cuba is the largest (population 10.15 million) and most westerly of the Greater Antilles chain, and occupies a major strategic position between the Caribbean and the Gulf of Mexico. Its communist government came to power in January 1959 after Fidel Castro's guerrilla army entered the capital, Havana. In 1961 came the abortive CIA-backed 'Bay of Pigs' invasion, which was followed in 1962 by the Cuban Missile Crisis when the Soviets tried to install MRBM and IRBMs on the island, and so brought the world to the verge of a nuclear war. In the period 1963-7 relations were strengthened with the communist Chinese, but these were cooled when Castro again became strongly pro-Soviet. In return for monetary aid and arms Cuban troops were used as Soviet surrogate forces in the Angolan and Mozambiquean wars of independence against Portugal, and in the Eritrean and Ethiopian-Somalian border wars in the Horn of Africa. Since then Cuba has maintained combat troops in these areas as 'advisers', those in Angola regularly coming into contact with troops of the South African republic and the Western-backed UNITA guerrilla organization. In 1983, during the invasion of Grenada by US armed forces, a number of Cuban military personnel and militia (together with a handful of Soviet Spetsnaz troops) fought on the side of the Marxist government. Other Cuban officers can be found in a number of nations throughout Africa and the Middle East in similar 'advisory' capacities.

The Army

The 25,000-strong expeditionary force in Angola is the largest of these groups of Cuban 'advisers' and has the status of an army, as has the 5,000-man force in Ethiopia. The status of a third army is accorded to the collective grouping of all the other 'advisers' deployed in other countries worldwide. In Cuba itself the country is divided into three geographical areas each garrisoned by an army. These armies are further subdivided into a differing number of corps (each assigned a total of three infantry divisions) plus a tank division and a mechanized infantry division. The Central and Western Armies have only one corps each, whilst the Eastern Army has two. The Isle of Youth is treated as a separate case and is classified as a distinct corps area with its own infantry division. Of the 13 infantry divisions only five are at full strength, whilst the others (and two of the armoured divisions) require reserve mobilization to bring them up to full strength. There are also eight independent infantry regiments and eight independent infantry battalions located throughout the country in the static-defence role at strategic positions. For deployment on special operations the central army HQ at Havana has an airborne assault and landing brigade with two regular paratroop battalions, whilst to support the various armies in the field it can assign one or all of the three field artillery brigades of the sole artillery division together with surface-to-surface missile battalions.

A full listing of units of regimental or smaller size includes:

35 regular and 24 reserve infantry regiments,
eight independent regular infantry battalions,
two regular and one reserve paratroop battalions,
12 armoured and mechanized cavalry regiments,
10 independent armoured reconnaissance battalions,
five regular and eight reserve motorized reconnaissance battalions,
18 regular and nine reserve artillery regiments,
four regular and 19 reserve air-defence rgiments, and
10 engineer battalions.

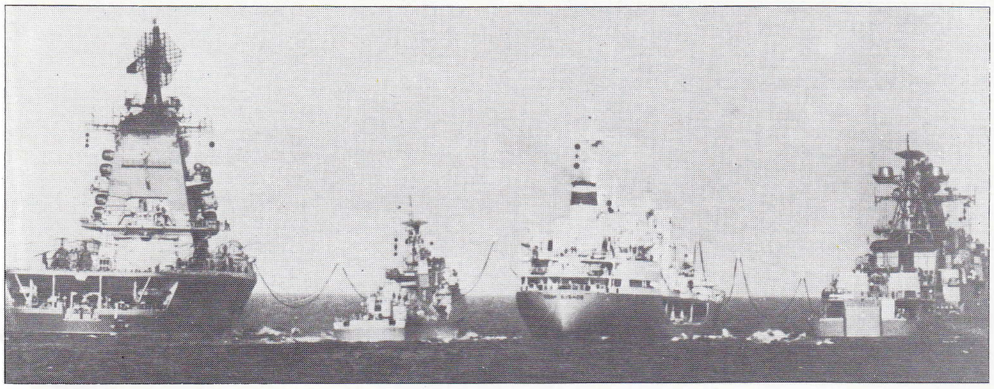
Almost all the weaponry used by the Cuban armed forces is of Soviet or Eastern block origin. A full list of the army's weapons includes:

Armour: IS-3 heavy tank (reserve); T-34/85, T-54, T-55, T-62, T-72 and T-74 MBTs; PT-76 light amphibious tanks; BRDM-1 and BRDM-2 armoured cars; and BTR-40, BTR-60, BTR-152 and BMP-1 APCs;
Artillery: (towed) 75-mm (2.95-in) M116 pack howitzer, 76-mm (3-in) M1942 gun, 85-mm (3.35-in) D-44 gun, 85-mm SD-44 gun, 122-mm (4.8-in) D-74 gun, 122-mm M1931/7 gun, 122-mm D-30 howitzer, 122-mm M1938 howitzer, 130-mm (5.1-in) M46 gun, 152-mm (6-in) M1937 gun/howitzer, 152-mm D-1 howitzer, 152-mm D-20 gun/howitzer, and 180-mm (7.09-in) S-23 gun;
(self-propelled) SU-100 SP gun (reserve and static role);
(mortars) 82-mm (3.2-in) M41, 82-mm M43, 120-mm (4.7-in) M38 and 160-mm (6.3-in) M43;
(MRLs) 122-mm BM-21, 140-mm (5.5-in) BM-14 and 240-mm (9.45-in) BM-24; and
(SSMs) FROG-4 and FROG-7;
Anti-armour weapons: RPG-2 and RPG-7 rocket-launchers; 73-mm (2.87-in) SPG-9, 82-mm B-10 and 107-mm (4.2-in) B-11 recoilless rifles; 'Sagger' and 'Snapper' ATGWs; and 57-mm M1943, 85-mm D-48 and 100-mm (3.9-in) T-12 anti-tank guns;
Air-defence weapons: (towed) 12.7-mm (0.5-in) M53, 14.5-mm (0.57-in) ZPU-1, 2 and 4, 23-mm ZU-23, 30-mm M53, 37-mm M1939, 57-mm S-60, 85-mm KS-12 and 100-mm KS-19 guns;
(self-propelled) 14.5-mm twin BTR-152, 23-mm ZSU-23-4, 30-mm twin BTR-60 and 57-mm ZSU-57-2 guns; and
(SAM) SA-6 'Gainful', SA-7 'Grail' and SA-9 'Gaskin'; and
Small arms: 9-mm CZ23 and 9-mm CZ25 SMGs; 7.62-mm CZ vz 52, 7.62-mm AK-47 and 7.62-mm AKM rifles; 7.62-mm PK, 7.62-mm RPK, 7.62-mm RP-46, 7.62-mm DPM and 12.7-mm DShK MGs.

In addition to the standing army of 130,000 there are some 135,000 ready reservists, a proportion of whom serve in the army for 45 days per year at any one time to fill out the units already mentioned. For internal police and security work there is the 15,000-man state security service, which is backed during times of tension by the 100,000-strong youth labour army, the 100,000-strong civil defence force and the 1.2 million-strong territorial militia.

The Navy

The naval importance of Cuba, which lies close to or astride strategic shipping routes into the USA



The USSR is ready to defend its African allies down to the last Cuban, and so makes considerable effort to train and equip the Cuban forces. Here a Cuban frigate, one of the Soviet 'Koni' class, exercises with (left to right) Leningrad, Ivan Bubnov *and an 'Udaloy' class destroyer during the Soviet 23rd Naval Task Force's visit in 1984.*

R PASS

The main strength of the Cuban air force is its interceptor/fighter-bomber force of about 200 MiG-21s but a number of MiG-17s are still operational, flying in close support of the army.

from Europe and Latin America, has been recognized only recently by the USSR, which is gradually modernizing the Cuban navy as a result. The major offensive capability has been switched from the small surface fleet to a new submarine arm, which came into being only in 1979. With a single 'Whiskey' class training and alongside battery-recharging boat and three brand new 'Foxtrot' class units (plus up to three more expected), the Cubans have a much underrated minelaying and special forces covert delivery capability, well within striking distance of many lucrative targets in the continental USA.

The surface fleet itself is divided into three flotillas corresponding to the army's military regions. The only large units are two Soviet-built 'Koni' class frigates, which are used in the ASW role and as HQ ships for the light forces. These latter comprise eight 'Osa I' and 13 'Osa II' craft equipped with SS-N-2A/B 'Styx' missiles, nine 'Turya' class torpedo attack hydrofoils, and an ageing force of five 'Komar' class missile craft, plus eight 'P6' and five 'P4' class fast attack torpedo boats.

There are also 27 'Zhuk' class patrol boats for coastal surveillance duties, and a limited coastal ASW capability is provided by six old 'SO1' large patrol craft, whilst defensive mine warfare is the province of three 'Sonya' class coastal minehunters/minesweepers and 12 'Yevgenya' class inshore minesweepers.

A limited amphibious warfare lift capability is provided by two 'Polnochny-B' class LSMs and six 'T4' class LCMs used by the 550-strong battalion of Desembarco del Granma (naval infantry).

The navy also mans a number of coast-defence units armed with 122-mm M1931/7 and 130-mm M46 guns, 152-mm M1937 gun/howitzers and some 50 SSC-2B 'Samlet' anti-ship cruise missiles. At present the SSM batteries appear to be inactive. A surveying fleet of 15 ships and launches also doubles in the intelligence-gathering role as required. Support ships and auxiliaries are kept to a minimum; only 15 are in service, the largest being a 5,000-ton training ship.

The Air Force

Of all the Cuban armed forces posing a danger to the CONUS in a general war scenario, the one most likely to cause significant damage is the 18,000-man Defensa Anti-Aeréa y Fuerza Aerea Revolucionaria (DAAFAR), the Cuban air force. Territorially organized along the lines of the army into three air zones with an extensive electronic air-warning system, the air force is one of the best equipped and most efficient in Latin America. The main strength lies in its interceptor/fighter-bomber force of 200 aircraft in 16 squadrons: two are equipped with the clear-weather Mikoyan-Gurevich 'Fishbed-C', three with the limited all-weather MiG-21 'Fishbed-F', two with the multi-purpose MiG-21 'Fishbed-J', eight with the multi-role MiG-21 'Fishbed-L/N' and one with the MiG-23 'Flogger-E'. For support of the army in the field there are some 50 fighter/ground-attack aircraft in four squadrons: one with the MiG-17 'Fresco-C' and the others with the MiG-23 'Flogger-F'. None of these aircraft are nuclear-capable, although Cuba's airfields could be used for post-strike recovery or staging areas for Soviet long-range nuclear-capable bombers such as the Tupolev Tu-95 'Bear' and Tu-22M/Tu-26 'Backfire'.

There is also a single helicopter gunship squadron with some 18 examples of the Mil Mi-24 'Hind-D'. Many Cuban helicopter pilots have gained operational experience on the type in African conflicts. An air assault squadron flies a further 20 armed Mi-8 'Hip-Fs', whilst normal rotary-wing transport and liaison duties are performed by six squadrons flying some 14 Mi-4 'Hound-A', 16 Mi-17 'Hip-H', 20 Mi-8 'Hip-C', six Mi-2 'Hoplite' and 15 Mi-1 'Hare' helicopters. A naval co-operation and ASW element is also evident, flying some 14 Mi-14 'Haze-A' helicopters principally on patrols around the joint Soviet/Cuban submarine base at Cienfuegos.

The air force is also responsible for Cuba's surface-to-air missile defences, and as such operates some 24 sites equipped with SA-2 'Guidelines' and 12 sites with SA-3 'Goas'. Delivery of newer missile models to improve area coverage is believed imminent, although these models are thought not to include the long-range SA-5 'Gammon' as a result of the political implications of such a move.

Fixed-wing transport and parachute assaults within Cuba and its nearest neighbours (including the USA) are the responsibility of four squadrons equipped with some 30 Antonov An-2 'Colt', 16 Ilyushin Il-14 'Crate', 20 An-24 'Coke', 22 An-26 'Curl' and four Yakovlev Yak-40 'Codling' aircraft. For delivery of heavy equiment and support of the overseas 'armies', the air force has to rely on the Soviet air force, Aeroflot and Cubana, the last being the Cuban national airline (which flies 10 Il-62 'Classic', five Tu-154 'Careless' and two Il-76MO 'Candid' transports).

All aircrew training is performed in the Western Air Zone, and is carried out by a mixed fleet of about 30 Zlin 326, 20 MiG-15UTI, 10 MiG-21U, two MiG-23U, 15 Aero L-39, five An-2 and six Il-14 aircraft.

It is possible that more modern equipment, such as additional MiG-23 'Flogger E/Fs' and Sukhoi Su-25 'Frogfoot' ground-attack aircraft, together with the export version of the Sukhoi Su-20/22 'Fitter' tactical fighter family, may well be imported to Cuba in the near future to replace the older combat types in its inventory. The effect of such deliveries on the USA remain a matter of conjecture, though it is worth remembering that the Americans already hold Cuba to be responsible for most of the political unrest in the region.